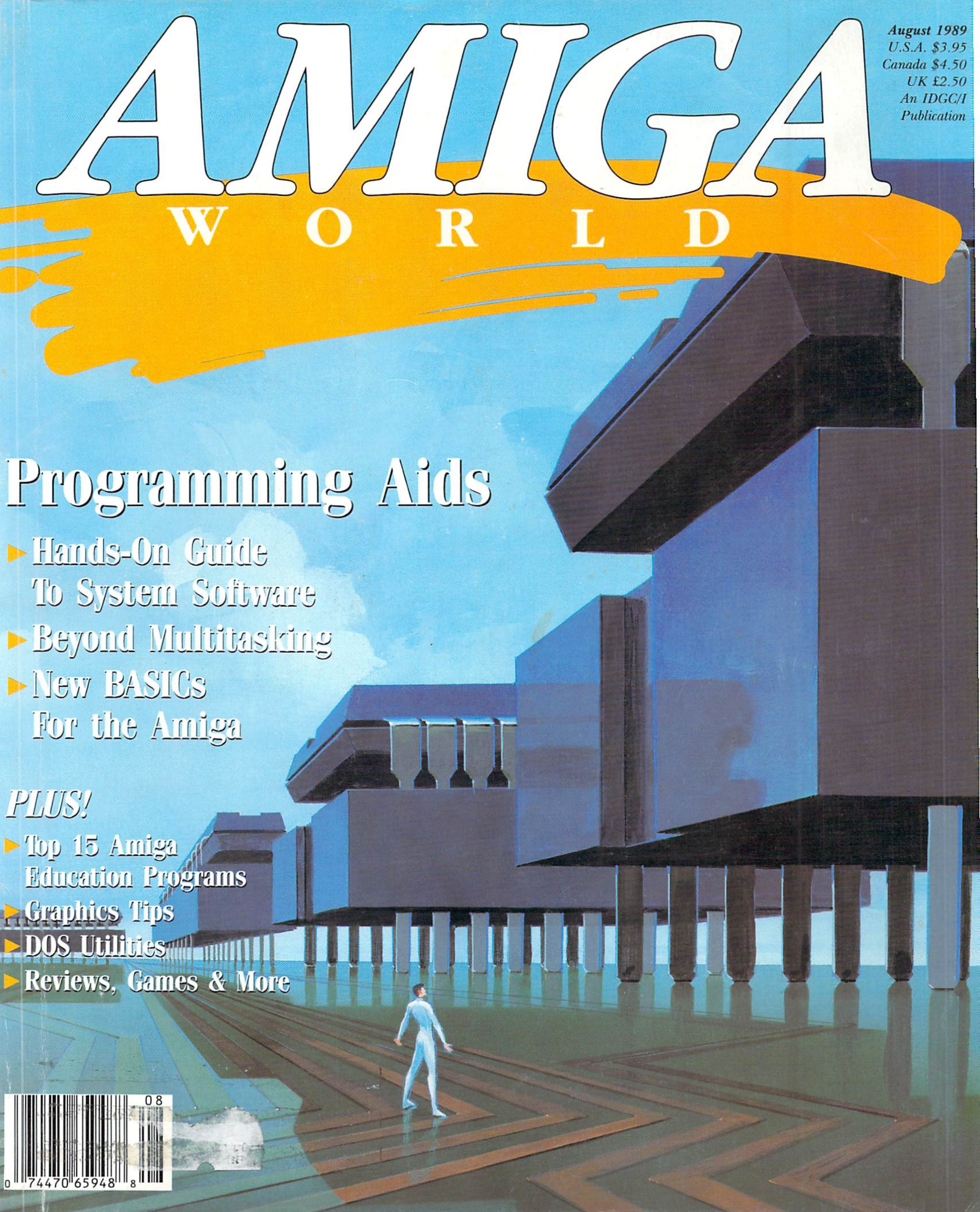
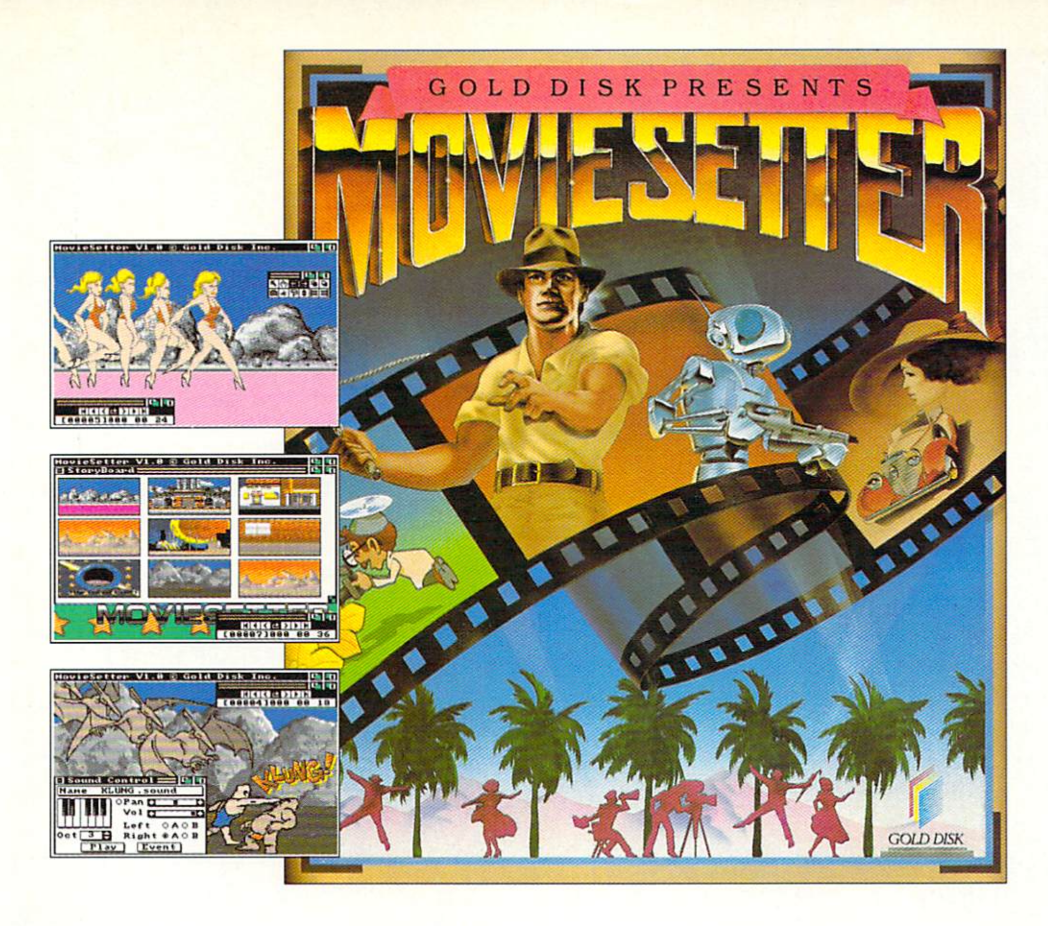

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AMIGAWORLD REVIEW, APRIL 1989.

"MovieSetter...the animation program to have... Gold Disk has set a standard for Amiga animation."

MOVIESETTER

A mover and shaker.

By Gary Ludwick

BILLED AS THE first WYSIWYG (what-you-see-is-what-you-get) animation package, MovieSetter combines tradition with innovation. This program integrates classic animation elements into a format that differentiates it from its predecessors.

Your building blocks are faces (commonly called cells), backgrounds, sets, and tracks. A face is a single image of an animated object; a set is a series of faces that portrays animated action by following a logical sequence.

The set editor . . . contains most of the drawing tools found in paint programs, plus some animation specific ones, such as rotation, flipping, and resizing tools.

MovieSetter allows complete flexibility of face placement and order.

Once you have assembled a set, you can define an object's horizontal and lateral movement on the screen with a track. You load your background and set, and the first face appears on the screen attached to the cursor arrow. Simply position the cursor where you want the action to begin. Clicking the left mouse button places the first face, advances one frame and brings up the second face. Repeat this process to lay the entire track.

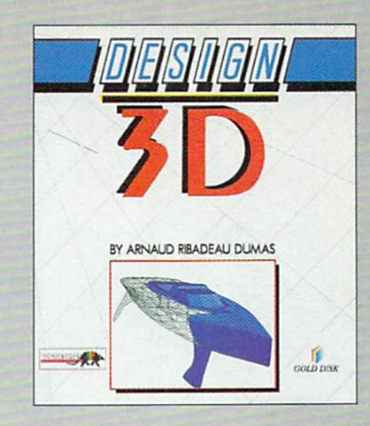
A group of track-editing tools allows you to move tracks after you have laid them down, place them in front or in back of others, insert new elements, and copy, cut, and paste tracks via keyboard or mouse. Best of all, you can see the results of your editing at once.

MovieSetter offers full palette control for up to 32 colors, color cycling, an interlace/full-scan option for video transfer, speeds up to 60 frames per second, plus clipboard and storyboard functions. Syncing digitized stereo sound with the video is again as easy as clicking a mouse button. MovieSetter provides not only stereo output for your soundtrack, but also channel-to-channel panning and the ability to change pitch as well.

This is the animation program to have. Gold Disk has successfully combined important elements - IFF compatible files, real-time previews, stereo sound, and a superb manual - into a powerful, flexible, easy-to-use package.

As they did with desktop publishing, Gold Disk Inc. has set a standard for Amiga animation.

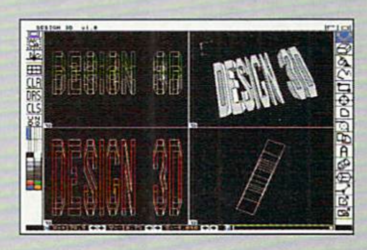
The above article is excerpts from AmigaWorld's April, 1989, MovieSetter review. This ad was created with Professional Page.



AMIGOTIMES 1.4 REVIEW

"Design 3D is a feature-laden program."

"Design 3D is a feature-laden program...The interface is well thought out...You need not ever leave your mouse...Best of all is the inclusion of automatic 3D text generation...a fully featured 3D font editor that allows you to alter the 3D font included or to create your own."



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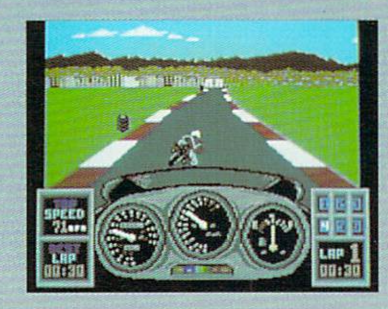
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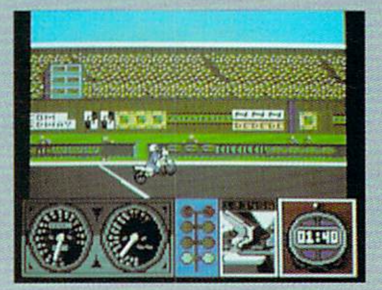
Better watch out!

After a test ride on Pocket Rockets, the high-speed motorcycle simulation game, Santa picked up a new sleigh that will make this year's rounds faster than ever. And whether you've been naughty or nice, you could win this Suzuki 600 Katana during "Santa's Sleigh Giveaway" in January.

Meanwhile, experience all the thrills and spills of high-speed racing with machines that take you from zero to 60 in under four seconds. Already gaining critical acclaim, Pocket Rockets lets you choose from four of the quickest, most exotic bikes on the planet. The action's as real as the adrenaline you'll feel.

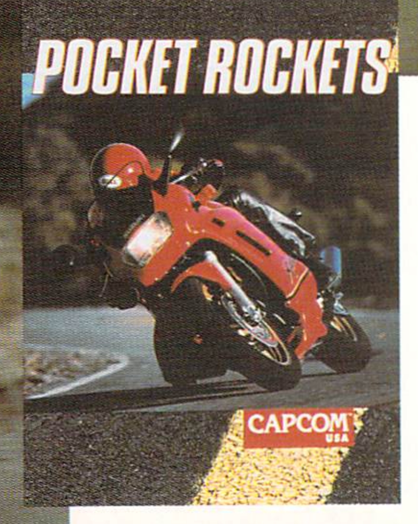
Then, enter "Santa's Sleigh Giveaway" from Capcom U.S.A. Besides the chance to win a new Suzuki motorcycle, you could get a Bell full coverage helmet, or Capcom computer game software. Look to enter in all Capcom computer game packages or visit your favorite computer game retailer for more information. Capcom's belated Christmas giveaway is just around the bend so don't miss out on your chance to win!





LEFT: Try your skill against the clock with a couple of laps around the test track. RIGHT: Drag racing demands a quick wrist and fast shifting. Just don't blow the engine!

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2. Prize winners will be determined by means of a random drawing to be conducted by an independent judging organization whose decision shall be final. All prizes listed will be awarded, but there can be only one prize winner per household, group or organization. Odds of winning depend on the number of entries received. Approximate grand prize retail value is as follows: Suzuki Katana $4,495.00. Winners will be notified by mail by FEBRUARY 15, 1990 and may be required to execute affidavits and advertising release. Taxes on prize winnings are solely the responsibility of the winners.

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ZEITGEIST

A clean, well-oiled machine.

I TRY A lot of programs and occasionally review them for the magazine. I think it is only fair to the developers that the Amiga I use to test products be a "stock" machine. We have a number of "stock" Amigas in the office to test products on. My home system is a straight-out-of-the-box A1000 with one meg and an external 3.5-inch drive. No fancy accelerator boards, flicker fixers, non-standard hard-disk controllers, etc.

But the A2000 on my desk has gone through a lot. I am not a very neat and orderly person, as you would see if you were to boot up my office 2000 and watch my startup-sequence. I have played with the colors, pointers, icons, startup-sequences, assigns, directories, fonts, drivers, commands, RAM: disks, boot disks, FAST: disks, anti-virus disks, auto-boot scripts, filter batch routines, and on and on. I bounce around from Workbench to Shell to ED to excellence!, and I don't always clean up after myself or leave gracefully.

My hard disk is a lot like my desk. Covered with papers, old newsletters, software I don't use anymore, cryptic notes to myself, and generally a mess. I like to try the new products when they come in to the office, and some of them have their own Workbench or hard-disk installation routines or PATH commands or ASSIGNs that must be added. So I make the changes or run the install routines. Later, when I finish with the product, I usually just leave it on the hard disk or remind myself that I should go back and clean up the startup-sequence again. Sometime.

I had four or five word processors on my hard disk. Many, many games. Drawers full of PD software that I hadn't opened in months. A handful of what I call "black-hole" programs and demos—things that don't quite work the way I want them to, things that I have modified to the point where they are so hopelessly screwed up that merely clicking on the icon gives me guru numbers that no human being should see. (I had one black-hole demo that was so explosive that my Amiga wouldn't even bother with a guru; it would just go straight to nuclear meltdown. Amiga_Fireworks_Mode I believe is the official term for it.)

Anyway, there were so many changes made to my startup-sequence and so many unused things on my hard disk that I decided to clean up everything. Now, I don't know enough about how my Amiga works to change vital information and be comfortable; I only know enough to be truly dangerous. So the first step was to back up everything I might want to see again. I dug out a hard-disk backup utility and an armful of floppies. It was going to take almost 20 3.5-inch disks. I thought that was a bit excessive, but I went ahead anyway. When I noticed that it was taking four disks just to back up the Trashcan drawer, I realized that I hadn't emptied the trash for a long, long time. There were also dozens of sound and screen files for my black-hole programs and PD stuff.

So I went back and spent a few hours cleaning up and tried the backup utility again. This time only 14 3.5-inch disks were needed. Another round of cleaning and I eventually got it down to nine disks. The backup finished and it was time to roll up my sleeves and get into my startup scripts.

After an hour of poking about, I gave up and called in a couple of hired guns, Lou Wallace and Tim Walsh. While I had been casually tinkering about with my system on one level, dark and mysterious changes had taken place on a deeper level. Changes that I didn't know enough to undo. It only took Lou another hour to clean things up for me, and while I watched, I learned a lot.

I learned that it is almost impossible for one person to keep up with all aspects of the Amiga. I have worked with them every day for the past four years and there are entire areas that I have only brushed against. I learned that, like playing a musical instrument, there will always be people out there who can spend five minutes with a program and produce unbelievable results that would take me weeks to approximate. That there are people who don't just play with startup-sequences, they really *understand* them. That there are programmers out there who can code circles around me in their sleep, and that I could spend the rest of my life learning about this machine.

So my hard disk is a bit more tidy now. My startup-sequence is about eight times faster than it used to be, and I have a few new things I want to try now that I have a bit more dangerous information and a backup of my startup disk.

Guy Wright

Amiga 500 Users



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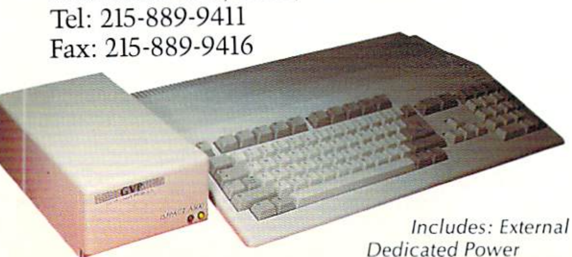
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REPARTEE

Comments, complaints, and concerns

from AmigaWorld *readers.*

Scientific Graphics

AS A RESEARCH scientist, I see a major application missing from the Amiga's roster of programs—simple data display and scientific graphics. In the rush to produce sophisticated solids modeling and animation programs, simple point and line graphs in two and three dimensions have been left behind. I would like to offer a few suggestions for a program that would fill this need.

Graphs divide naturally into two and three dimensional types:

Two-dimensional graphs. Plot points or lines using linear, log or time axes. Use a variety of point symbols and line types, plain or "graph-paper" background, and optional curve fitting and splining.

Three-dimensional graphs. Plot points, lines or wire-frame objects. There are two different objectives here. One is to produce a finished graph with axes and perhaps in perspective view or with hidden line removal. The other objective is to interactively and smoothly spin the data or 3-D object to view it from different angles. For speed, this is best done as a simple rotation of the object without perspective and without hidden line removal.

The program should read data from ASCII files in either column, mail merge or free format so it could be used with any database program. Links to drawing and CAD programs are also desirable. The program should not render surfaces but should optionally read and write Videoscape 3D and Sculpt 3D object files.

The users of this program would not only be scientists, but also business users plotting investments, animators looking for the best angle to view their object, CAD designers using data in their drawings, or anyone wanting to visualize numbers.

The philosophy of this program should be akin to that of DeluxePaint: provide general tools without imposing a simplified and inflexible procedure. Script file capability with some graphics primitives is a must.

I'd like to see a programmer and publisher produce this program, and I'd be glad to consult or test the result.

Fred Klein, Ph.D.
Menlo Park, CA

1000 Loyalist

I BOUGHT ONE of the first 20 Amiga 1000s that were shipped to my home state, Michigan. Now, close to three years later, I look back and question that purchase. Since the release of the Amiga 500 and 2000, and soon the 2000HD and 2500, support for the Amiga 1000 has dropped to almost zero.

Just a few months ago, I went shopping for a hard drive, and what I saw almost made me sick. There were absolutely *no* hard drives for the Amiga 1000. After searching long and hard, I managed to locate one. I took one look at the price tag and set it back down. A good-sized A1000 hard drive was priced close to $1500! Why, then, can companies sell an Amiga 500 hard drive for close to $900 less? I realize that there are quite a few differences between the 500 and the 1000, but nine-hundred-dollars worth?

I think that companies should put at least a little effort into putting out some hardware for us poor people who cannot afford to upgrade to a 2000, and for those, like me, who are loyal to the old 1000.

Eric S. Cruzen
Brighton, MI

Kudos for Mr. Kent

I KEEP READING reviews of Jim Kent's Zoetrope [Antic Software; see review in June '89 issue of *AmigaWorld*, p. 74] that refer to it the way a maiden aunt would refer to a cousin of loose morals: "Well, she's very nice, very pretty, but well. . .you know!"

The first thing an artist takes into account in planning a work of art is the medium in which he or she is working: Oils do not work like watercolor, markers do not work like ink, and so on. Shouldn't the same apply to computer art? Zoetrope's lo-res stigma need not necessarily be a drawback to the artist willing to consider the confines of lo-res and use its characteristics to his advantage. Zoetrope's outrageously easy user interface does everything but tell me what to animate, leaving me free to consider the animation itself, which is the whole point, after all, isn't it? And its anti-aliasing feature ameliorates a world of sins. All the super-bitmaps in the world mean nothing to me if I have to spend eight hours of precious production time figuring out how to perform one simple function.

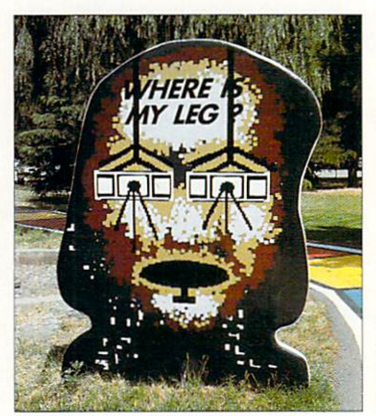
I have a shelf full of fancy animation programs gathering dust, but I haven't put Zoetrope down since I got it. And my clients have been delighted with the results. My kudos to Mr. Kent and his team!

Kathleen Sontag
Deja View Video Productions
Massapequa Park, NY

Send your letters to: Repartee, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. Letters may be edited for space and clarity. ■

NOTEPAD

Compiled by Linda Barrett



Roadside conversations.

Talk of the Town

SLUGGISH MORNING COMMUTERS in Abilene, Texas were startled into full wakefulness last fall when confronted by five, eight-foot-tall, fiberglass heads flanking the main thoroughfare. Those driving east saw children's faces in bright primary colors who asked the questions: Can you talk?, Can you move?, Can you breath?, Can you feel?, Can you think? Motorists driving west could contemplate the gray robot-like faces on the reverse side asking: Where is my mouth?, Where is my leg?, Where is my nose?, Where is my pulse?, Where is my brain?

Created by nationally-exhibited artist and Texan Emily Jennings, the sculptures were selected by the Abilene Cultural Affairs Council for exhibit. Emily created the pixeled robotic images for the pieces with her Amiga 500 using DeluxePaint II (Electronic Arts) and Butcher (Eagle Tree Software). To test the placement of the proposed sculptures, she captured photographs of the outdoor sites with Digi-View (NewTek) and overlaid them with scaled drawings of the figures in DeluxePaint II.

The sculptures had been peacefully displayed the previous summer in California as part of a larger on-site installation called "Blind Mans Bluff." A busy member of the art faculty for Hardin-Simmons University in Abilene, Emily was taken by surprise when her artwork became the center of a civic debate.

For months, letters to the editor in the *Abilene Reporter-News* seesawed between support from citizens who thought the "Talking Heads" an exciting cultural kick, to the extreme disapproval of a fringe that hinted at satanic inspiration. Emily met the issues in a guest editorial where she explained: "The content of my art is social commentary on human behavior, how we learn, and how we are conditioned as children by games and toys. I want my work to be amusing and thought provoking."

Besides attention, her work brought Emily a $5000 grant from the 1989 Mid-American Alliance in cooperation with the National Endowment for the Arts. Her "conversational" heads are going for a stroll around Texas next year as part of the touring exhibit "One Hundred Years of Texas Sculpture" sponsored by the Huntington Art Museum, University of Texas, Austin.

—Sue Albert

Bow Wow?

WHILE THE DOG days are supposed to be a summertime phenomenon, they descended in May on the World of Commodore Show. Most of the more than 50 exibitors who trekked to the Los Angeles show acted as if they were on valium, and many cited sluggish hardware sales as the prime cause. Add the dearth of any significant new products and you can easily understand the low excitement level.

As usual, NewTek had the biggest, flashiest booth and tantalized attendees with demos of the still-out-of-reach **Video Toaster** and the still-unavailable **Digi-Paint III.** NewTek's strategy is risky with the appearance of a new contender in the video effects sweepstakes.

Digital Creations and Progressive Image Technology, the folks who brought you SuperGen, introduced three new products: **Living Color**, **The VMachine**, and the **2000S**, an upgraded SuperGen that includes Super VHS inputs and outputs. Living Color is touted as a Quantel Paintbox for the Amiga. The VMachine, or "Toaster Killer," will provide time-base correction and real-time video effects.

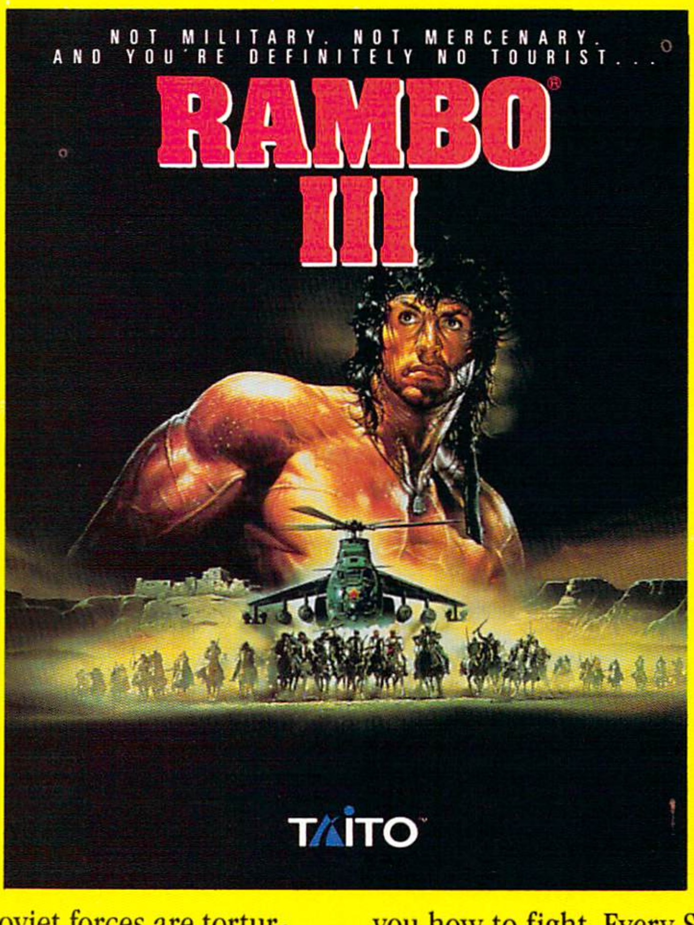
Other video developments included MicroIllusions' **Edit Decision List Processor** software that, when combined with the company's **Time-Code Reader/Generator** hardware, creates a complete MS-DOS-compatible video-editing station.

Mindware International unveiled a new twist for animators. The package, still under development, makes it possible to run animations while simultaneously loading new segments from your hard drive. With this software, an animator can create continuously running animations whose length is limited only by the size of available hard-disk memory. *Gone With the Wind* here we come!

In the is-it-real-or-is-it-a-gimmick category, 3-D images (both X-Specs and red-blue examples), were scattered about the show. If this isn't a general trend with users, it certainly is popular with exibitors as a crowd stopper. Besides, you can put your company logo on all those nifty cardboard goggles. *—Gene Brawn*

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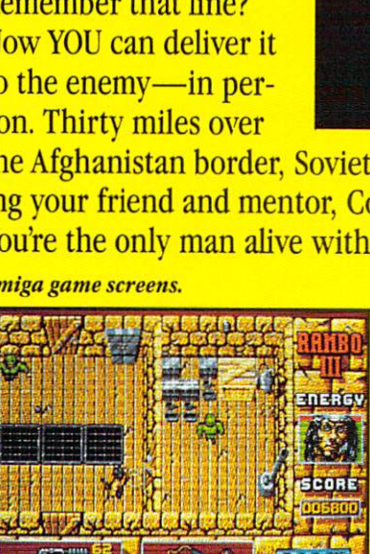


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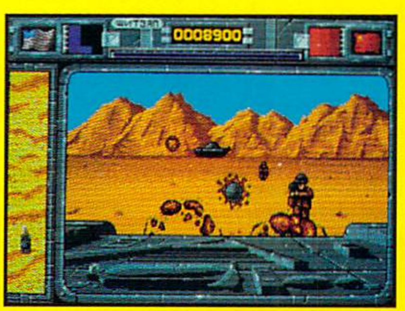
Amiga game screens.



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HiSoft BASIC Professional GFA BASIC 3.0

A tale of two (more) BASICs.

By Louis R. Wallace

THE AMIGA'S EARLY days marked the best of times for Amiga Basic. Then, it was the fastest and most advanced interpreted BASIC available on microcomputers. Many programmers today, however, find Amiga Basic programs too slow. Worse yet, even with its extendability via libraries, many of the Amiga's abilities are difficult for Amiga Basic to access—or completely out of its reach. A number of Amiga Basic accessories and replacements have been developed to counter these limitations, the most successful of which was Absoft's A/C Basic compiler. Now we have before us two new entries: the full-featured HiSoft BASIC Professional compiler, and GFA-BASIC 3.0, a highly acclaimed interpreter first published on the Atari ST.

Besides looking at command options and the degree of Amiga Basic compatibility these packages offer, I used some benchmark programs to test their speeds (see the accompanying chart for results).

HiSoft BASIC Professional

HiSoft BASIC is much like Microsoft's Quick BASIC compiler: Both are complete development systems consisting of compiler and text editor, a combination that offers flexibility, power, and an efficient means of creating and testing software.

With HiSoft, you can edit a program, compile it to memory, execute it, and then return to the editor when you exit your program. Should the compiler discover syntax errors, a memory feature in the editor lets you quickly jump to the flawed lines. The full-screen HiSoft editor allows you to change locations using the cursor keys or the mouse, and insert new lines by pressing the Return key. Other standard features, such as cut and paste, search and replace, and text printing are also supported, as are an auto-indentation option and the ability to insert disk files into program listings. Because HiSoft supports ASCII format, you can import ASCII programs written with another text editor into HiSoft for compilation.

The Game Made

HiSoft's compiler offers a number of options. You can check your code for undeclared variables, stack overflows, and processing runtime events, and check arrays for proper dimensioning. More importantly, you can compile your results as either a stand-alone program or as one that uses the Shared Library. The difference is one of size and portability. Shared Library programs are very small, but require the presence of the HiSoft libraries to run. Using the REM $OPTION statement within a program lets you override the compiler dialog-box options and thus gain more control.

With stand-alone programs the required compiler library is built in. You pay a price, however, in terms of program size. For instance, a 77-byte Amiga Basic sample program consumed over 14200 bytes when compiled in HiSoft stand-alone format. This overhead is not so great, though, in comparison with the 44700 bytes required for the same program compiled as a stand-alone with A/C Basic. These size differentials held true in all my tests.

More to the Tale

In addition to several new options, HiSoft BASIC Professional supports virtually all Amiga Basic commands and syntax. New commands include REDIM [APPEND] (which allows you to redimension arrays), COMMAND$ (which lets you run compiled programs from the CLI and pass parameters as it executes), BLOAD, and BSAVE.

Improved looping and decision structures (such as DO LOOPs, REPEAT UNTIL, and SELECT CASE) afford greater flexibility. Some commands access AmigaDOS: MKDIR and RMDIR create and remove directories, while FEXISTS verifies the existence of files. The PCOPY command dumps the current screen to the printer using Preferences parameters. Both the WINDOW and SCREEN commands are enhanced in HiSoft BASIC: Both allow larger displays to accommodate the PAL standard, and SCREEN allows you to define more TYPES (unfortunately, though the manual refers you to the Amiga ROM Kernel Manual instead of defining screen types).

In all, HiSoft offers 36 new commands and reserved words. It supports most interpreter statements (except COMMOM, RESUME NEXT, LOAD, and SAVE). Beyond these, one of HiSoft BASIC's most important features is its ability to create object code that you can link with object code generated by C compilers and 68000 assemblers to produce stand-alone executable programs.

The Golden Thread

My experience indicates a high degree of compatibility between HiSoft and Amiga



They may not be worth losing your head over, but both packages are definitely worth using.

Basic, although given the almost infinite number of command combinations possible, it was not feasible to test them all. I put the HiSoft compiler through its paces with several Amiga Basic programs; while most required little or no modification, I found that a couple did not work properly after being compiled. (These programs ran without a hitch when compiled with A/C Basic.)

GFA BASIC 3.0

Although it contains a runtime library to enable you to distribute programs, GFA BASIC is not a compiler, and thus is not capable of creating stand-alone programs as is HiSoft BASIC. And although it is (like Amiga Basic) an interpreter, using Amiga Basic programs in GFA BASIC requires considerable rewriting; the two are not very compatible.

GFA BASIC is an entirely new BASIC language. It consists of over 300 commands with which you can create programs to access almost every aspect of the Amiga. GFA BASIC provides options traditionally available only through C, Modula 2, and assembly. Most importantly, though, GFA BASIC is *fast*. Not only does the language outpace Amiga Basic, but amazingly, GFA tied or beat both the HiSoft and A/C Basic compilers in almost every benchmark test.

The package includes a unique editor—one with extra options and requirements designed especially for GFA BASIC. Unlike Amiga Basic and its compilers, GFA BASIC allows only one statement per program line, and offers no option for separating statements. When you press the Return key after completing an entry, GFA checks that line for syntax errors; if a problem is found, the screen flashes and the cursor remains in place. While this method can be somewhat irritating, it saves time in the long run.

You can add blank lines wherever you please, but the GFA text editor does not insert them automatically when you press Return. It does, however, indent program lines for you. Some mouse and menu support is provided, but for many operations, you must memorize Ctrl-key commands. One option works much like an outline processor; it lets you hide subroutines by condensing them to just a name.

GFA BASIC saves files as tokens in a manner similar to Amiga Basic. To run your program, select the Run menu option or press the shift and F10 keys. You can load a program or subroutine written by another editor and saved in ASCII using the editor's MERGE option.

Knitting Patterns in BASIC

Most Amiga Basic commands have equivalents in GFA BASIC, but commands with similar functions differ in syntax from their Amiga Basic counterparts.

GFA offers some of the best BASIC commands I have seen for variable and data manipulation. Among the 40 or so commands available for manipulating variables are INSERT and DELETE, which admit or erase array elements, automatically shifting the rest of the array's contents. ARRAYFILL enters a value into any specified array. To simplify sorting array elements, QSORT and SSORT offer built-in Quicksort and Shellsort functions. DUMP lets you print values for single variables or specified ranges.

Assembly and C programmers will recognize GFA's bit-manipulation commands. BCLR allows you to clear a designated bit, BSET sets it, BCHG either sets or unsets the bit (depending on its start position), and BTST returns a true or false value to indicate whether a bit was on or off. SHL(x,y), SHR(x,y), ROL(x,y), and ROR(x,y) all shift bits in a variable.

Among input and output commands is FORM INPUT, which allows you to enter a specified number of characters for assembly into a string. Also, in addition to Amiga Basic's PRINT and LOCATE commands, GFA provides PRINT AT(x,y) plus options for horizontal and vertical tabs via HTAB and VTAB.

GFA offers all of Amiga Basic's disk I/O support for sequential and relative data files, but here again there are powerful extras. DIR$(n) returns the current AmigaDOS pathname, and DFREE(n) returns the total bytes left free on the disk. EXIST(name$) indicates whether a specified file exists in the current path. BLOAD and BSAVE allow you to load or ►

save whole chunks of the Amiga's memory, while STORE and RECALL read text files from and write them to string arrays. Perhaps the most significant command is FILESELECT; it lets you define a complete file selector for filename entry, and place it on screen.

The MOUSE command and its variations have simplified mouse programming. MOUSE returns the X and Y coordinates and the current mouse-button status, while MOUSEX, MOUSEY, and MOUSEK return single values. The screen-print function, called HARDCOPY, uses Preference values by default, but ten options let you create custom screen dumps.

GFA's subroutines, called PROCEDURES, must be preceeded with either PROCEDURE or SUB. Variables can be local or global. Control statements are in abundance; they include IF . . . THEN, ELSE . . . ELSEIF . . . ENDIF, SELECT CASE, FOR . . . NEXT . . . DOWNTO, REPEAT. . .UNTIL, WHILE. . .WEND, DO . . . LOOP, DO . . . WHILE, DO . . . UNTIL, LOOP . . . UNTIL, and EXIT IF among others.

Event programming is supported via ON BREAK, ON ERROR, and ON MENU. You can program time-related events using AFTER TICKS GOSUB and EVERY TICKS GOSUB (ticks are measured in 1/200 of a second). Interestingly, the ON COLLSION command is supported while COLLISION ON is not.

Still Knitting

Among GFA's graphics commands are SETCOLOR, with which you can create palettes by defining red, green, and blue values. GRAPHMODE allows you to set the graphic output modes JAM1, JAM2, COMPLEMENT, and INVERSID. DEFLINE enables you to define the drawing pattern for the rendering commands using either set patterns or custom definitions, while DEFFILL lets you create custom patterns for filling drawn objects.

The bitmap rendering commands—PLOT, LINE, BOX, CIRCLE, ELLIPSE, and POLYLINE—can be used to create outlined objects. Adding PBOX, PCIRCLE, PELLIPSE, and POLYFILL causes the defined area to fill with a solid or pattern. You can use the GET and PUT commands to stamp images onto the bitmap, just as in Amiga Basic.

DRAW and SETDRAW are curious commands. DRAW is followed with various string expressions that are similar to LOGO; in fact, it wouldn't take much to emulate LOGO with GFA BASIC.

Through VSYNC, GFA offers a means—common to assembly and C—of minimizing the flicker that results from placing bitmap data with PUT. VSYNC accomplishes this by waiting for a vertical blanking interrupt to occur (i.e., until the electron beam enters the bottom border of the screen.

GFA BASIC supports screens and windows in a big way. The OPENS (Open Screen) command opens almost any type of screen the Amiga can display, including interlaced, HAM (Hold-and-Modify), and Extra_HalfBrite. The OPENW (open window) command lets you set options that heretofore were accessible only via higher level languages. These include SIZEVERIFY, MOUSEBUTTONS, MOUSEMOVE, GADGETUP and GADGETDOWN, RAWKEY, VANILLAKEY, NEWPREFS, DISKREMOVED ►

Two by Two: BASIC Benchmark Results

I tested each package for speed on both a standard A2000 (the result—in seconds—is the first value on each line) and on an A2000 equipped with Commodore's A2620 accelerator (the value—also in seconds—in parentheses). I performed these tests on the Amiga Basic interpreter and the A/C Basic compiler as well, for points of reference. To give you an idea of how HiSoft's stand-alone compilation fares, the size of each file is listed under the clocked times.

BENCHMARK	Amiga Basic	A/C BASIC	HiSoft BASIC	GFA BASIC 3.0
FileWrite*	174.6 (89.9) 330 bytes	210.6 (91.6) 45480 bytes	89.8 (47.7) 17604 bytes	89.6 (47.9) 432 bytes
FileRead*	188.5 (93.8) 254 bytes	105.3 (51.9) 45240 bytes	44.6 (27.4) 17316 bytes	42.8 (26.8) 376 bytes
Math*	16.5 (7.12) 302 bytes	5.8 (1.9) 45336 bytes	3.6 (1.5) 17380 bytes	5.6 (2.2) 454 bytes
Sieve*	64.3 (28.2) 506 bytes	14.3 (5.0) 45748 bytes	10.5 (4.6) 18920 bytes	10.2 (4.4) 381 bytes
Print String	132.5 (99.4) 214 bytes	85.6 (73.6) 45104 bytes	87.2 (75.5) 17120 bytes	28.9 (25.3) 420 bytes
String Fx's	73.2 (31.7) 365 bytes	23.7 (10.1) 45588 bytes	10.5 (4.2) 17728 bytes	11.2 (4.5) 582 bytes
DrawLine	38.1 (22.9) 173 bytes	26.4 (17.6) 45024 bytes	26.8 (17.1) 17200 bytes	13.9 (10.4) 251 bytes

ABOUT THE TESTS:

FileWrite writes a 1280000-byte file to a FFS-formatted hard disk. (All program times are based on the default buffersize in the OPEN statement.)

FileRead reads the file created by FileWrite.

Math measures 5000 iterations of the standard math operators.

Sieve calculates the time required to find all primes from 0 to 7000. The A/C Basic and HiSoft options that disable event checking (which generates faster results) were not used.

Print String prints a character string 1000 times.

String Fx's uses LEFT$, MID$, and RIGHT$ to extract character data 10000 times.

DrawLine plots a line from 0,0 to 639,199 5000 times on a standard Workbench screen.

* These tests are based on *Byte* magazine benchmarks.

and DISKINSERTED, SUPERBITMAP, and BACKDROP. Experienced C programmers will recognize these as flags for the IDCMP (Intuition Direct Communications Message Port) facility.

Given the language's overall sophistication, I was disappointed to find that GFA's commands for manipulating objects (BOBs) are virtually the same as those in Amiga Basic and other compilers. On the other hand, a set of commands for using hardware sprites is included. Sound options, too, are sparse; the SOUND and WAVE commands are again reminiscent of Amiga Basic.

You can start new CLI processes from within GFA BASIC using the EXEC COMMAND$ option, read joysticks with the STICK and STRIG functions—even call EXEC, GRAPHICS, WORKBENCH, INTUITION, LAYERS and DOS library commands directly from GFA BASIC.

These examples demonstrate just how far GFA went in creating this language; I have not even mentioned most of the commands, functions and statements available. Thankfully, GFA did not sacrifice speed for features; the interpreter holds its own against other BASIC compilers, and blows away Amiga Basic. My only reservation is the editor; while it is powerful, it is also very rigid.

I SEE...

HiSoft BASIC and GFA BASIC have very different abilities, but both represent a step forward in BASIC programming on the Amiga.

HiSoft BASIC Professional generates more compact and faster code than does A/C Basic. Its integrated environment is friendly, flexible, and efficient. These features, when combined with its extended command set, make HiSoft BASIC Professional worthy of serious consideration.

GFA BASIC is the most complete BASIC programming language available for the Amiga. While beginners might find the massive array of options staggering, intermediate and advanced BASIC programmers are in for a treat.

These are far, far better BASIC packages than Amiga Basic programmers have ever known.

HiSoft BASIC Professional
MichTron
576 Telegraph
Pontiac, MI 48053
313/334-5700
$159.95
No special requirements.

GFA BASIC 3.0
Antic Publishing
544 Second St.
San Francisco, CA 94107
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By Loren Lovhaug

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Continued on p. 74

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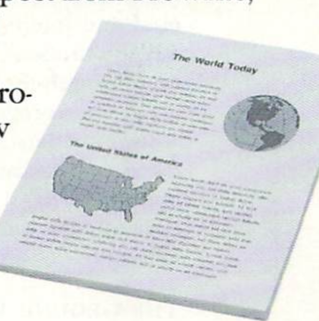


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TAKE IT FROM THE TOP

A Guide to the System Software

Learn how the Amiga's native software stacks up, and make your programming less frustrating and the results more powerful.

IN THE SUPERMARKET, if you pull the wrong can out of a pyramidal display of soup, the whole thing can come tumbling down around you. Programmers face the same type of crashing mess if they extract information from the wrong spot in the Amiga's layered and interdependent operating system. If you attempt to use a function without working your way to it through the layers of the system software's pyramid, your program may not always run.

If you understand how the system software is structured and the capabilities of its components (such as libraries of ROM Kernel routines, include files, and devices), you can avoid disaster and program more efficiently.

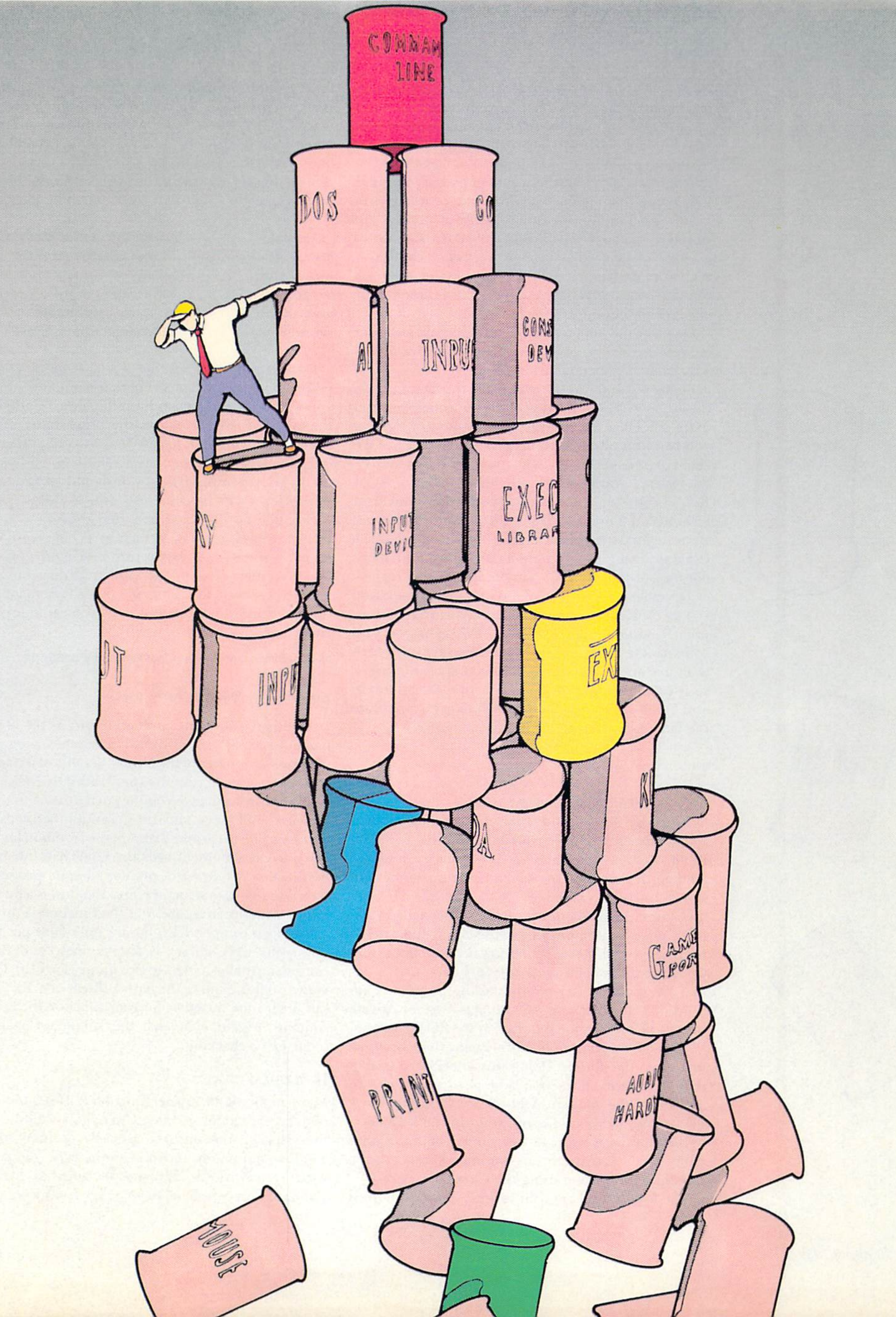
The Ground Work

On relatively simple computers, such as the Commodore 64, everything is at a fixed location within a small address space. You soon learn that if you want to print a character to the screen, you either call an Operating System routine at location 65490 or store the character value directly into screen memory, which starts at location 1024. The Amiga, however, does not even have a default text screen, let alone a system routine at a fixed location to print text to that screen. Most of the time, you must create your own writing surface by opening a window, then choose a text font to use—including its size, color, and style—before you can put text on the screen.

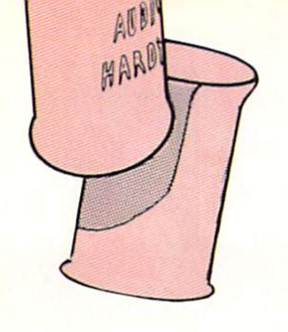
The reason for the Amiga's complexity is flexibility. Simple systems limit the ways that you can change or expand the system without changing your application software. For example, the C64 uses a fixed-sized jump table for entering ROM Kernel routines, so there is no compatible way to add more such routines. Because the majority of programs must load at a fixed memory location, you cannot load and run more than one program at a time. Even simple hard- ►

By Sheldon Leemon

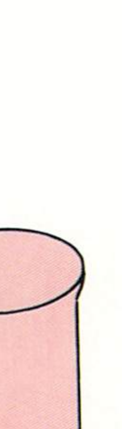
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COMMAN
LINE
DOS
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HARD

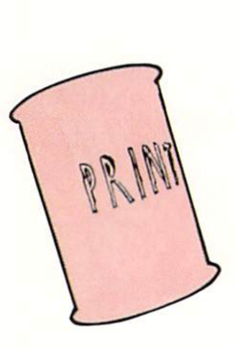


ware changes, such as increasing the memory to 128K or switching the text screen from 40 to 80 columns, can prevent the machine from running existing software. Commodore designed the Amiga Operating System to avoid such limitations. It makes almost no assumptions about how much memory the computer has, where that memory is addressed, or where programs (including operating-system routines) are stored in memory. As a result, correctly written programs can take advantage of hardware changes—such as more memory, new storage devices, different input devices, and faster processors—without any changes to the software.



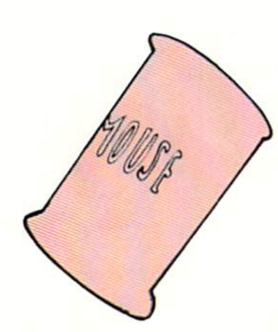
One way the Amiga avoids fixed sizes and locations is by using a type of data structure called a linked list. Each member of a linked list (called a node) contains a pointer to the address of the next node in the list, as well as its portion of the information stored in the list. Once you know where one node is located, you can find all of the others by simply tracing the chain of pointers. The Amiga uses linked lists to store the system libraries, which provide access to the ROM Kernel routines, and devices, which allow individual tasks to communicate with input and output devices. Because linked lists have no fixed size, you can easily expand them; programmers can easily add more libraries of functions to the system's existing set.

To anchor these lists of pointers, the operating system must resort to one fixed location as a reference point. Location 4, also known as AbsExecBase, always contains the base address of the Exec library, which is always open. The system knows that base address, so it can find the entry points to the OpenLibrary and OpenDevice functions, which in turn can locate the base addresses of any library or device.



Libraries

ALL OPERATING SYSTEM routines are grouped by purpose into libraries, the most important and frequently-used of which are located in the Kickstart ROM. Because the 256K of ROM space could not hold all the libraries, the less important routines are stored in the libs directory of the Workbench disk; the system loads them into RAM as needed. (For a descriptive list of libraries, see the chart "Libraries.") Each library consists of the library node (pointer) that ties it into the system, a collection of jump instructions that are used as entry points into the various system functions, and a data segment that is used for private storage of information required by the ROM routines.



To use a function in one of the libraries, you must first open the library. Doing this notifies the system that the library is in use, and gives you the base address of (the pointer to) the library. Once you know the base address of a library, you can call a function in that library by using its entry in the library's jump table. When you are through using a library, always remember to close it using the CloseLibrary call.

The lowest level you can make a library call on is in assembly language, which requires you to keep track of the pointers yourself. You must find the Exec library base address, call the OpenLibrary function entry point (which sits at a known offset from library base) to get the other library's base address, and then call the library routine at its offset from the library base. The code might look like something like this:

```
move.l 4,a6                 ;get address of Exec library base
movea.l #LibraryName,a1     ;address of library name text
movea.l #0,d0               ;set version num to 0 (don't care)
jsr-552(a6)                 ;JSR through OpenLibrary offset
move.l d0,a6                ;get library base address
jsrOFFSET(a6)               ;JSR through function offset
```

The example assumes that the label LibraryName points to an ASCII text string that names the library you want to open (such as intuition.library), and that the label OFFSET contains the offset value of the routine that you want to call. It also assumes that the call to OpenLibrary returns a valid base address in d0. In your own programs, you should add an error trap to check for a value of 0, which indicates that Exec could not find and open the library.

Higher-level languages, such as C, take care of a lot of these details transparently, making the process much simpler. Calling an Amiga library function from C is similar to calling any other C function. To open a window in C, for example, you could use this code:

```
IntuitionBase=OpenLibrary("intuition.library",LIBRARY_
  VERSION);
Window=OpenWindow(&NewWindow);
```

In the first statement, intuition.library is the library name, LIBRARY_VERSION is a variable containing the version number of the library (a value of 0 returns any version, while running the VERSION command from the Shell will give you the current version number of any library), and IntuitionBase becomes the pointer value to (base address of) the Intuition library. The second statement calls the OpenWindow function; &NewWindow is a pointer to your program's NewWindow data structure, and Window is a pointer to the Window structure that the function returns.

You need to open each library only once per program (the Exec library is always open, and the C compiler usually opens the Dos library for you). Once your program knows the base address of a library, it can determine the offset for each function the library contains. (Again, note that this simplified example omits error-checking.)

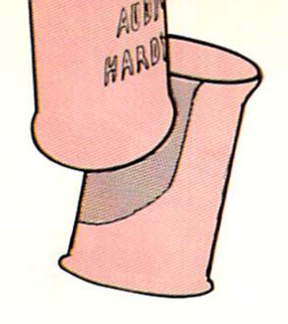
Include Files

Many of the ROM Kernel function calls require a lot of data. For example, when you open a window, you must specify the starting size and position of the window, minimum and maximum sizes, the colors used to draw the window border and title bar, the standard and custom window gadgets to include, the ►

Libraries

Libraries listed in italics are found in the Libs directory on Workbench 1.3. All others are located in ROM.

Name	Description
diskfont	Contains routines used to load and manage disk-based text fonts.
dos	Contains routines to manage processes, the disk filing system, and AmigaDOS devices.
exec	Contains routines for managing tasks, messages, interrupts, and I/O, plus routines to access libraries, devices, and resources. The backbone of the operating system.
expansion	Houses routines to configure expansion devices and to integrate them into the system.
graphics	Contains low-level graphics functions (such as those used to draw points, lines, filled shapes, and graphics text), higher-level animation routines, and support for sprites and BOBs.
icon	Provides support functions for Workbench icons.
intuition	The most heavily-used library for programs that take advantage of the Amiga interface, it contains the routines used for creating and managing screens, windows, menus, gadgets, and requesters, as well as routines for managing Preferences.
layers	Builds on the functions in graphics library to provide the clipping needed to divide a physical screen into logical "windows." Although the beginning user isn't likely to call these functions directly, they are used heavily by Intuition in window management.
mathffp	Provides single-precision Fast Floating Point math routines. These functions operate quickly, but are not very precise. C programs don't normally call these routines directly, because compilers use their own floating point math interface.
mathieeedoubbas	Implements the double-precision IEEE floating point math routines. These functions operate more slowly, but are more precise than the FFP routines. With version 1.3, these functions make use of a math coprocessor if one is available, greatly increasing the speed at which they operate. As with the FFP routines, C programs don't normally call these routines directly, because compilers use their own floating point math interface.
mathieeedoubtrans	Provides double-precision IEEE transcendental math functions to go with the routines in mathieeedoubbas.
mathtrans	Provides single-precision transcendental math functions to go with the routines in mathffp.
translator	Contains a function to convert a plain English text string into the phonetic text required by the narrator device.

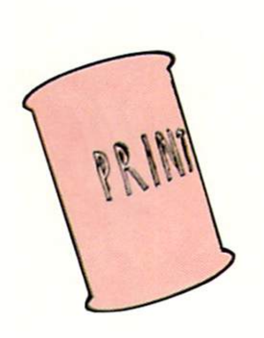


menu to attach, the type of check mark to use with menus, the window title, the screen on which to place the window, and so on. When the window is open, Intuition keeps track of even more data, including the actual screen memory used for its display, the text font used to write into that window, and more. The system stores this information in data structures, whose composition is defined in the include files that come with your compiler or assembler. You can create data structures (for example, the NewWindow structure used to create a window) and the operating system can create them (such as the Window structure that Intuition creates when you open a window). Whatever their origin, however, a familiarity with these data structures is crucial to understanding how to program the Amiga.

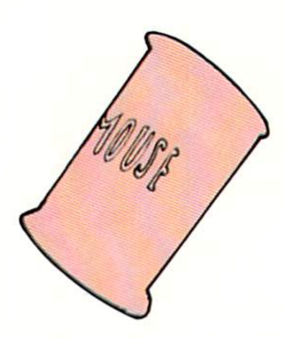
You can learn the contents of these structures by reading the include files that come with your compiler or assembler (the C versions have names such as intuition.h, while assembly language includes are called intuition.i and the like). These files contain descriptions of the data blocks that tell the compiler or assembler the amount of storage space to allocate for each one. With the rest of your definition statements, you must alert your program to the include files the library functions you use will need. In C, these statements take the form:

```
#include <intuition/intuition.h>
```

Include files also provide comments to explain how the system routines use these blocks of data and how they relate to each other. For example, the intuition.h file offers the following definition of the IntuiText data structure:



```
/* IntuiText is a series of strings that start with a screen location
 * (always relative to the upper-left corner of something) and
 * then the text of the string.
 * The text is null-terminated.
 */
struct IntuiText
{
UBYTE FrontPen, BackPen;        /* the pen numbers for the rendering */
UBYTE DrawMode;                 /* the mode for rendering the text */
SHORT LeftEdge;                 /* relative start location for the text */
SHORT TopEdge;                  /* relative start location for the text */
struct TextAttr *ITextFont;     /* if NULL, you accept the default font */
UBYTE *IText;                   /* pointer to null-terminated text */
struct IntuiText *NextText;     /* continuation to TxWrite another text */
};
```



Knowing what information is required for an IntuiText structure helps you to understand such routines as PrintIText, which uses IntuiText structures as part of its input. Notice the IntuiText structure contains pointers to the addresses of other data structures, just as in linked lists. Such linking occurs quite frequently in the Amiga operating system. Study your include files; you will need a knowledge of how data structures relate to one another to thoroughly understand how pieces of the operating system fit together. For a complete list of include files and their contents, see the *Amiga ROM Kernel Reference Manual: Includes & Autodocs* ($32.95, Addison-Wesley).

Devices

DEVICES ARE A variation of the library structure that let you communicate with input/output devices, such as a printer, a modem, or the clipboard. (For a descriptive list of devices, see the chart "Devices.") As with libraries, some are contained within the Kickstart ROM, while others are housed in the devs directory of the Workbench disk. Although you open and close devices just as you would a library, communicating with devices is much different. To use a device, you must first set up a data block called an IO Request, containing a pointer to a message port, which programs use to communicate with the device; a device ID, unit number, command and flag fields; and an error-return field. The standard Amiga function library included with most C compilers (amiga.lib or c.lib) provides the support functions CreatePort and CreateExtIO, which will create the required data structures for you. With the IO Request block set up, you can open the device with the Exec function OpenDevice. A simplified version of the C commands to open the serial device is:

```
SerMPort=CreatePort("serial",0);
SerRequest=CreateExtIO(SerMPort, sizeof(structIOExtSer) );
error=OpenDevice("serial.device",0,SerRequest,0);
```

where SerMPort is the message port used for the IO Request, and SerRequest is the IO request block used for the OpenDevice call.

The command number you place into the command field of the IO Request determines the type of action the device takes. Every device is expected to respond to eight standard commands, if only to return an error number indicating that the command is not supported. Some, such as the audio device, support nonstandard commands that take advantage of their unique features. The standard commands, whose numbers are defined in the file exec/io.h, are:

CMD_RESET	aborts all pending I/O and resets the device
CMD_READ	reads x bytes into a data buffer
CMD_WRITE	writes x bytes from a data buffer
CMD_UPDATE	flushes internal device buffers, writing data
CMD_CLEAR	clears internal device buffers, losing data
CMD_STOP	stops the device, usually for user intervention
CMD_START	resumes I/O after a CMD_STOP
CMD_FLUSH	aborts all pending I/O requests ►









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Devices

Devices listed in italics are found in the devs directory on Workbench 1.3. All others are located in ROM.

Name	Description
audio	Used to allocate and control the Amiga's four audio channels.
clipboard	Provides a standard (though not widely supported) means of transferring text or graphics data between applications.
console	Used to receive input from the keyboard and output formatted text to a window, in the manner of the traditional (mouseless) computer terminal. The device translates ANSI escape sequences into cursor movements and other text controls.
gameport	Controls the mouse/joystick ports, plus provides routines to set the controller type and the reporting frequency.
input	The primary provider of information about mouse and keyboard input, it merges reports from both the keyboard and gameport devices into a single input stream. Functions are provided for intercepting input (for "hot-key" applications), for creating an input event under software control, and for setting the key repeat rate.
keyboard	Handles raw information from the keyboard, and converts it into input events. Most of the time, you'll use the input device for keyboard input, rather than this device.
narrator	Produces synthesized speech from phonetic text input, using the audio channels.
parallel	Communicates with the parallel port. Its commands allow you to configure the port, and read or write to it.
printer	Communicates with a printer, connected to either the serial or parallel port. Handles translation of Amiga printer command codes to printer-specific codes, using the Preferences printer drivers. Commands to print text characters and a graphics screen are included.
serial	Controls communications with the serial port. Its commands allow you to set the serial communications parameters (speed, handshaking, parity, and so on), as well as reading or writing to the port.
timer	Permits you to use the CIA timer hardware or screen display vertical blank to initiate task signals or interrupts at specified intervals.
trackdisk	Provides a low-level interface to the floppy-disk drives. Includes functions to read, write, or format a sector. This device is more likely to be used indirectly by AmigaDOS than directly by the programmer.

Note that some commands require additional information to be placed into the IO Request structure, such as the address of a data buffer.

After you set up the IO Request and open the device, you initiate I/O with a call to the Exec function DoIO or SendIO. DoIO calls are synchronous, which means that they wait for the I/O task to complete before returning control to the task that made the function call. Use DoIO if the program must have the requested information to continue the task at hand. SendIO calls are asynchronous, meaning they queue up the request and return control immediately. If your program does not need the device's information right away, use SendIO. Continuing with the serial- ►

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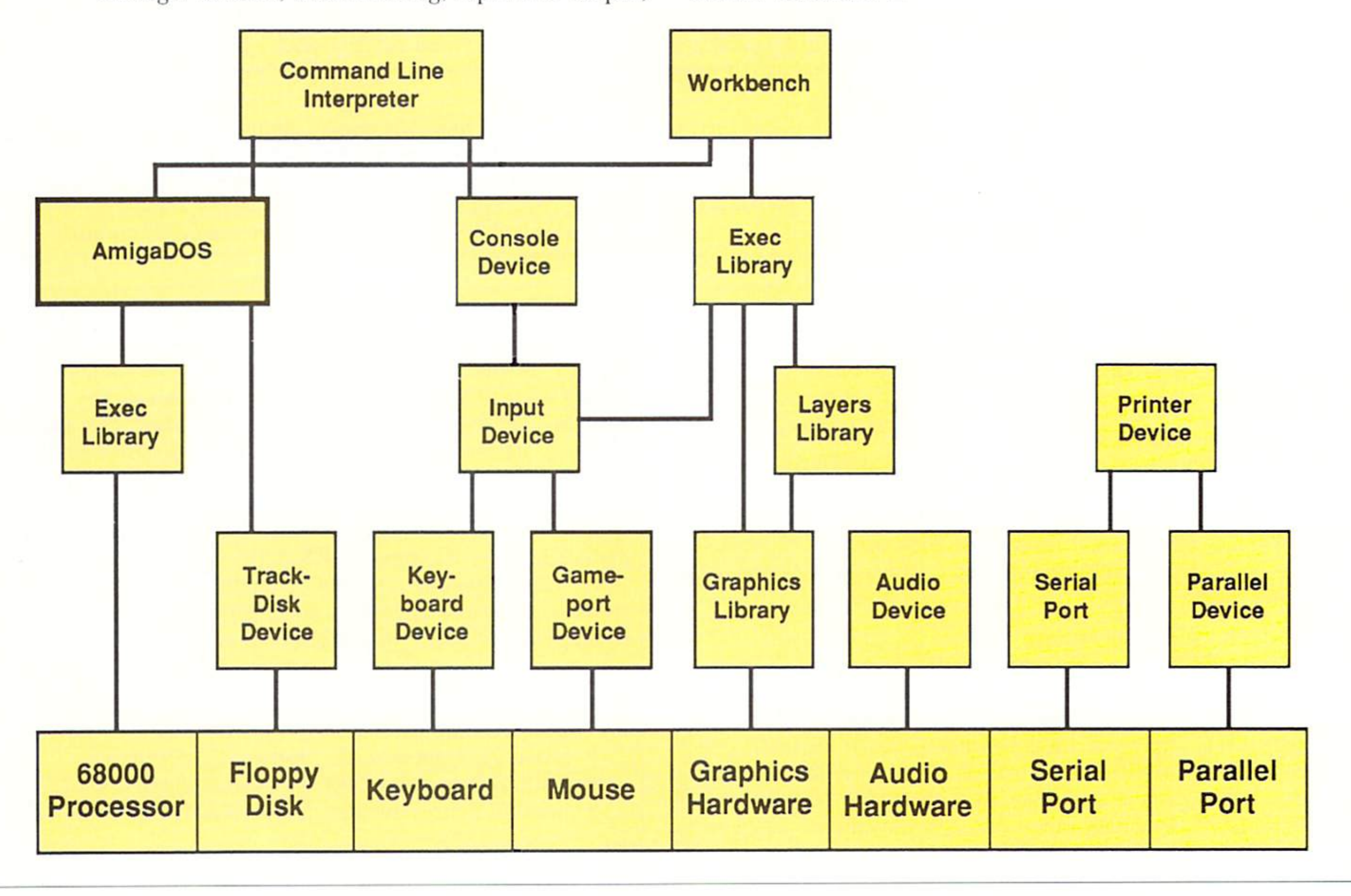
The System Software Blueprint

THE MOST ACCESSIBLE portion of the operating system pyramid is the top—the Workbench and the CLI interfaces. Workbench uses the Intuition library to create its displays, while the CLI requires the Console device for its and both use AmigaDOS to execute commands.

Holding up AmigaDOS is the Exec library (the manager of tasks, task switching, input and output, and message passing) and the Track device, which communicates with the floppy drives.

The Intuition library relies on the Input device for input (as does the Console device), plus the Layers and Graphics libraries for output.

The next level down are the devices that control the most basic components of the system—the machine's hardware. □



port example used above, a command to read a single byte might look like this:

```
SerRequest->IOSER.io_Data = &Buffer;   /* set buffer address */
SerRequest->IOSER.io_Length = 1;       /* set read length */
SerRequest->IOSER.io_Command =         /* set command num-
  CMD_READ;                               ber */
DoIO(SerRequest);                      /* perform synchron-
                                          ous IO */
```

Some additional functions are available to assist in asynchronous I/O. The CheckIO function will check if the request was completed, while the WaitIO function pauses your program until the specified I/O is finished. When all I/O is finished, you should close the device, and de-allocate all IO Request blocks and message ports, using the CloseDevice, DeletePort, and DeleteExtIO calls. For a discussion of devices, see the *Amiga ROM Kernel Reference Manual: Libraries and Devices* ($34.95, Addison-Wesley).

Resources

FOR POWERFUL CONTROL on a low level, the Exec maintains a linked list of functions called resources. (For a descriptive list of resources, see the chart "Resources.") Resources provide protocols for sharing hardware in a way that is consistent with multitasking. Though a beginning programmer probably will not need to resort to taking over the hardware, it may be necessary in certain high-performance applications (such as MIDI programs that need accurate control over musical devices).

To access resource functions, you first must open the resource with the Exec call OpenResource. You ►

System Resources

Name	Description
cia	Provides access to bits and interrupts from the two 8520 CIA (Complex Interface Adapter) chips.
disk	Contains routines that can be used to gain exclusive control over floppy disks.
misc	Used to gain exclusive access to the serial or parallel ports.
potgo	Allocates the POTGO registers that control the mouse/joystick/lightpen/paddle ports.

may then use the resource functions to allocate or de-allocate specific hardware resources. For more information, see the *Amiga Hardware Reference Manual* ($24.95, Addison-Wesley).

Programming the Amiga may seem confusing at first, but it's a lot easier once you understand the design philosophy behind the machine. The Amiga's multitasking operating system is built in layers, starting with modules with direct control over the hardware, and working up to the sophisticated routines that build the graphics interface. The best place for the beginner to start is at the top of this pyramid, with the functions provided by Intuition and AmigaDOS. As you gain more experience, you can begin to investigate the more mysterious areas. But always try to obey the rules—do not jump directly into operating-system routines, don't modify the system's private data structures, and do not depend on any specific hardware configuration. That way, your programs will work not only on this generation of Amiga computers, but on the next as well. ■

Sheldon Leemon is the author of Inside Amiga Graphics *and other books, and he is a frequent contributor to many computer publications. Write to him c/o* AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

Do Your Homework

If you want to program with the Amiga's system functions and devices, an hour with a good book can often prevent an all-night debugging session. Here are some we find helpful:

Amiga Programmer's Guide ($16.95)
Compute! Publications
324 West Wendover Ave.
Suite 200
Greensboro, NC 27408
919/275-9809

The Amiga Programmer's Handbook Volumes I and II ($24.95 each)
Sybex Books
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Amiga System Programmer's Guide ($34.95)
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800/451-4319

Amiga Technical Reference Set:
Amiga Hardware Reference Manual ($24.95)
Amiga ROM Kernel Reference Manual: Includes and Autodocs ($32.95)
Amiga ROM Kernel Reference Manual: Libraries and Devices ($34.95)
Addison-Wesley Publishing Company Inc.
Jacob Way
Reading, MA 01867
617/944-3700
800/447-2226

The Programmer's Guide to the Amiga ($24.95, C and Modula-2 source code disks: $7.50 each)
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ARexx: The Missing Link

You don't need the vision of Darwin or the skills of a "power programmer" to make practical use of this new interprocess command language that takes Amiga multitasking to its next evolutionary stage of development.

By Gene Brawn

FOR SEVERAL YEARS, Apple has been touting its HyperCard system as a revolutionary breakthrough in technology that unites a graphical interface with animation, sound, text, data, video, telecommunications, and control of external devices. Amiga's answer to the HyperCard is found in ARexx, a programming and DOS command language, macro processor, and interprocess controller, all rolled into one easy-to-use command language.

As a command language, ARexx allows such niceties as automatic insertion of spreadsheet-generated figures into word-processing documents, the import of artwork into databases, and the performance of genlock operations from animation programs—all under total program control. Best of all, the initiation into the world of ARexx is painless, the fee small.

If you frequently write AmigaDOS batch commands, ARexx can streamline the process. If you define "macro," or single-key commands within applications, you can use ARexx to tie those commands to the outside world. If you want to write programs to perform low-level computer-control chores, ARexx puts the power you need at your fingertips.

ARexx was developed by William Hawes, the renowned author of ConMan. Interestingly, ARexx is considered simultaneously one of the most significant as well as the most unappreciated pieces of software ever developed for the Amiga. In this article I will explain the features and signifigance of the language and how it can help Amiga computerists with everyday computing chores. In addition, I will show how ARexx compares with HyperCard and why it offers the potential of establishing Amiga presence on the multimedia map.

WHAT IS AREXX?

ARexx began life as REXX, an interprocess command language for IBM mainframe computers. ARexx represents the Amiga version of REXX. As an interprocess control language, REXX controls any number of applications programs in a multitasking environment. For example, a REXX script program can receive output from a database, send it to a spreadsheet for inclusion in the latest sales figures, then route the updated spreadsheet figures to the national sales force via the telecommunications software, all under program control without any human intervention. This type of power did not long go unnoticed and the language soon spread to other computer systems—and eventually to the Amiga. Undoubtably, ARexx has been slow to enjoy widespread acceptance in the Amiga community only because it is fairly new to this environment.

As a command language, ARexx's power is fully realized when it is used to communicate with and control applications software. To permit this, the application must first recognize the existence of ARexx via some form of an ARexx interface, and then allow it program control. The interface within the applications software usually consists of a minor amount ►

ILLUSTRATED BY LESLIE COBER



of code that communicates with ARexx. This does not pose much of a problem with newly developed software, but existing applications are another story. Although software manufacturers may plan to include the ARexx recognition code in a future update of an existing application, there is typically a time lag involved between updates.

Nearly 20 major applications already offer an ARexx interface (see the list accompanying this article for individual titles), with more promised, but it could be a year or more before we see a substantial base of software packages supporting ARexx. Commodore could score points with end users and programmers by licensing the program and bundling it with every new Amiga sold.

What Does ARexx Offer the Amiga?

To gain perspective on the signifigance of ARexx in an Amiga environment, let's examine some methods the Amiga can use to share data between applications without ARexx. When you put the Amiga's multitasking capabilities to use, there are often times you probably wish that data could be shared between two or more processes or applications. One way to do this is to create a RAM: file, which we will call "RAM:file stuff." Now program A can save data to "RAM:file stuff" and program B can load that file when the data is needed.

You sacrificed efficiency in the above process because read and write commands must be issued manually from within the respective procedures. The new PIPE: device provided with Workbench 1.3 appears to be the ideal solution to automating data transfers. Passing data to another program works like this: Program A saves its files with each file name prefaced with the word PIPE: instead of the usual DF1: or RAM:. In the above example, the file name would be PIPE:DATA STUFF. Similarly, the receiving program loads its data using the same file name, PIPE:DATA STUFF. As long as the target program continues to accept data, anything saved to PIPE:DATA STUFF will be sent or "piped" directly to the receiving application without any user intervention.

The PIPE: device is a great time-saver, but to make interprocess communications truly useful, you need a way to send not only data, but also commands to another program. The ability to include commands is what differentiates using a command language such as ARexx from using a single PIPE: command.

How Does It Work?

ARexx bears resemblance to many other languages available for the Amiga. Like BASIC and FORTH, it is an interpreted language. This means that each time you run a program, ARexx reads your script and translates it into machine-language instructions "on the fly." This is the functional opposite of a compiled language, such as C, which must transform your program script into a machine-language file before it executes the program. The advantage to the interpreted method is that program development is much faster. The disadvantage is that interpreted-language programs generally do not operate as fast as compiled programs.

Like Modula II, ARexx provides the tools necessary for structured programming, including procedures (referred to as functions in ARexx) and both local and global variables. Not surprisingly, ARexx does not use GOTO statements. Powerful string operators similar to those found in SNOBOL (a text-processing language) also exist in ARexx. More importantly, ARexx can perform anything the AmigaDOS EXECUTE command does, only better. The language gives you complete control of the Amiga's low-level I/O functions and a complete set of looping, decision and input tools.

You can easily create ARexx programs with your favorite text editor or word processor. Simply write the script, save it as an ASCII file and invoke the ARexx interpreter, "rx," to execute it. For debugging, a tracing feature within ARexx allows you to watch or interact with the program during execution.

Some Examples

The well-known "Hello" program would be written as follows to be executed in ARexx:

```
/* Tell the folks hello, Rexx */
say 'Hello, Rexx'
```

The first line is a comment, which is required in ARexx. The second line consists of an instruction symbol, "say," and a string. "Say" tells the program to display the string on the output device, usually the screen. Like most high-level languages, ARexx has a complete set of functions, tokens, symbols, operators, commands, and expressions.

Variables in ARexx follow a simple format. Unlike BASIC or Modula II, no typing of data is needed. All data is initially treated as a string and, if this fails, successively tested until a suitable type is found.

```
/* Variables are flexible... */
A=1 ; B=2           /* More than one statement per line OK */
C=A+B               /* these variables have numeric data */
say A '+' B '=' C   /* prints 1+2=3 */

/* change data to text strings... */
A='Amiga' ; B='World'
say A || B          /* prints "AmigaWorld" */

/* ...but, don't try to fool ARexx! */
B=1                 /* B is numeric, A is still alpha */
C=A * B             /* ...and ARexx will return an error */
```

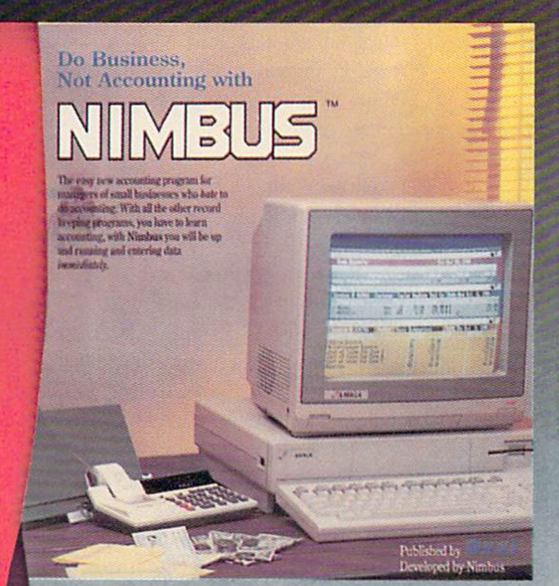
Thankfully, error checking within ARexx prevents illegal operations on incompatible data types. In the above example, for instance, you cannot multiply the non-numeric string AMIGA by the numeric variable B.

The following example is a little more advanced, ►

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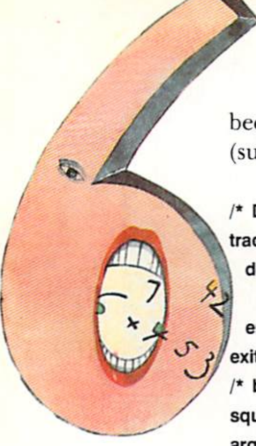
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because it illustrates ARexx's control and function (subroutine) structures.

```
/* Defining and calling a function */
trace results          /* prints results of calculations */
  do i=1 to 5          /* perform loop 5 times */
    say i square(i)    /* call square subroutine */
  end                  /* marks the end of the loop routine */
exit                   /* this exits an ARexx program */
/* below is the function, or subroutine */
square:                /* label */
arg x                  /* get the argument */
return x**2            /* square it and return */
```

If you understand the fundamentals of programming, this routine is easy to follow. If you are a confirmed non-programmer, don't panic, because I have kept the code simple. The first instruction after the required comment line, the trace option, prints the results of any calculation performed by the program. If you want to display, say, the entire text of the line being executed, you can substitute ALL for the RESULTS statement. There are eight tracing options, which can appear in the same window as the output data or in a custom window for improved clarity.

The next line contains the control structure, or DO LOOP, which executes the lines between it and END five times. The following line is the heart of the program. As before, the SAY instruction prints any strings, contents of variables, or results of a calculation that follow it on the same line. This program prints two numbers, consisting of the current value of the loop counter and its square, for each pass through the loop.

A SQUARE function does not exist in ARexx, so the interpreter scans the rest of the program for the text string "square:." The colon after the string indicates that this is the beginning of a function. The "arg" command retrieves the value to be squared, which was passed here as the "i" in square(i), and assigns it to the variable "x." The final line instructs the program to "return" to the calling program segment with the result of x squared (x**2).

This admittedly simple example cannot begin to display the full scope of ARexx, but it does present some of the flavor of the language. You can see that ARexx syntax and program structure differs little from other, more mainstream programming languages. What most distinguishes ARexx from the others is its ability to perform interprocess communications.

Talk to Me Rexx

ARexx tasks are regular AmigaDOS "processes," with all their multitasking advantages. Therefore, you can run as many tasks as desired with each one fully controlled and coordinated from within the same ARexx program.

The standard Amiga operating system contains Message Ports that are used for system communications. Any task running on the Amiga can open one or more of these ports and "speak" to the operating system, to an external device, or to other processes. ARexx uses the capabilities of these ports to implement its most powerful feature—interprocess communication and control. What this term means is that ARexx can control a given application using that application's own command set.

This process is handled rather elegantly. A program communicating with ARexx is called the host application. Both the host and ARexx communicate through a standard EXEC message port using just two data structures, the most common of which is illustrated in Figure 1. (The other is used for passing strings to and from ARexx.) All that is required of the host application is that it understand how to send and receive messages via this structure. ARexx even provides library routines that the host program uses to create and maintain this structure. A typical exchange might appear as follows:

Figure 1: The basic ARexx message packet structure.

```
STRUCTURE RexxMsg,       MN_SIZE
APTR rm_TaskBlock        ; global pointer
APTR rm_LibBase          ; library pointer
LONG rm_Action           ; command code
LONG rm_Result1          ; primary result
LONG rm_Result2          ; secondary result
STRUCT rm_Args 16*4      ; arguments (arg0 thru arg15)
                         ; the extension area
APTR rm_PassPort         ; forwarding port
APTR rm_CommAddr         ; host address
APTR rm_FileExt          ; file extension
LONG rm_Stdin            ; input stream
LONG rm_Stdout           ; output stream
LONG rm_avail            ; reserved
LABEL rm_SIZEOF          ; 128 bytes
```

1. Using the structure in Figure 1, the host program puts a name in the rm_Args slot. Normally, this is simply the name of a disk-based ARexx program, which generates a macro (a string representing one or more commands) recognized by the host. If the string is enclosed with quotes, however, ARexx assumes that this string is stand-alone program code requiring priority execution. This eliminates the need to load the program from a file.

2. The host then sends the message packet to the ARexx port using the EXEC function PutMsg( ).

3. ARexx locates the named file requested by the host, spawns a new DOS process, and runs the program.

4. ARexx fills in any other pertinent information in the structure, then passes the commands back to the host, using the same port and structure it received initially. It then waits for the host to respond that the ►

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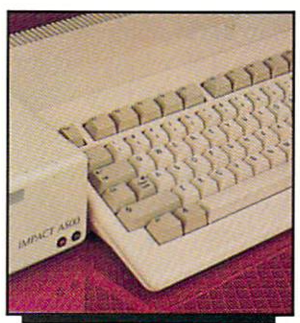
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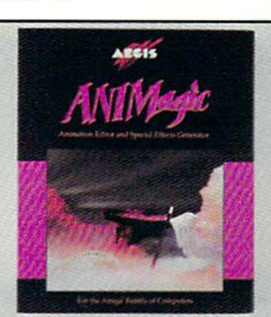
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command was successful, or to take appropriate action if it failed.

You might think that if you wanted ARexx to issue commands to another application, you would have to "teach" it lists of commands and their respective functions. Fortunately, this is not the case. If the ARexx interpreter encounters an unknown word in the program, it assumes that the word is a command for the host program and sends it to the message port of that application. That's all there is to it.

Hyper Rexx

With a little thought and work, a true hypermedia system is entirely possible on your computer. The Amiga possesses the capabilities necessary to create a system that would easily outperform the pioneering Apple product—and with off-the-shelf software!

You can use a hypermedia system to browse and explore a text, picture, and audio database in a friendly, graphics-oriented environment. If you do not know the meaning of a word or reference, an ARexx-based system might let you click on the word to get a definition from the built-in dictionary. This reference might lead you to another reference, and so on. Think of the possibilities of a hypermedia system that takes advantage of the Amiga's 4096 colors, real-time animation, video, stereo sound, and multitasking.

The tools for such a system exist on the Amiga today, complete with ARexx interfaces. Some of the candidates include: Superbase, a traditional relational database; Microfiche Filer, a visually oriented database; TxEd and other text processors; and the public-domain version of SpeechToy for providing voice output. In the area of graphics, there's the new DigiPaint II, Magellan to provide the intelligence, and, to round out the package, a forthcoming anim player/scripter from a major software publisher with an ARexx interface. The task of integrating all of these applications is not a trivial process, but if you are interested in trying, I compiled a simplified plan of attack:

1. First, review all of the commands available to ARexx from each of the programs you have chosen to use as the building blocks of your hypermedia system. Decide which of them you want to make available to the user.

2. Next, consider how you want these functions to interact. For example, a picture being displayed might need a caption file, so it directs the database to retreive it. The database directs the system to open a small window over the picture, in which to display the text.

3. Because you are integrating several applications, you should create a "master" interface for the user. You can employ your favorite programming language to accomplish this task; just be certain to include the ARexx interface! The user interface is just one fixture in a hypermedia system, similar to the HyperCard "home" screen. It is where the available applications and tools are displayed and selected. Keep it simple, make it a graphical user interface and as intuitive as possible. You should treat the interface as just another module in the system, to be controlled and coordinated by the main ARexx program.

4. Now you can write the ARexx program(s) that controls and coordinates the system. You might want to approach this task in steps or in modules. By writing small, self-contained modules, each can be dedicated to a specific aspect of the system. For example, one module might handle only text displays, another graphics, and a third could handle the presentation of animations.

5. If you take the modular approach, create another ARexx module that is responsible for the routing and scheduling of user requests from the interface module. The modular approach gives you a lot of flexibility in the construction of your hypermedia system. You will be able to add new functions and applications as they become available, or to update those that have changed.

The Beginning

This article is only an introduction to ARexx, designed to explain what it is and how everyone who uses an Amiga can benefit by its existence. It's up to you to make this vision of what ARexx can do a reality. Use those software-registration cards, and tell the software manufacturers to include the ARexx interface in all of their programs.

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Microfiche Filer Plus	VLT (terminal emulator)
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Magellan	CygnusEd Professional
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AmigaTex	Digi-Paint II
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ARexx is a powerful tool that has the potential to improve the way you compute on your Amiga. But getting this power in your hands is a two-way street; you, the user, must do your part by letting the software publishers know that you want it. They, in turn, have to provide you with an easy way to use that power. ■

Gene Brawn is a computer-game programmer, graphics designer, television director, and digital animator. Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

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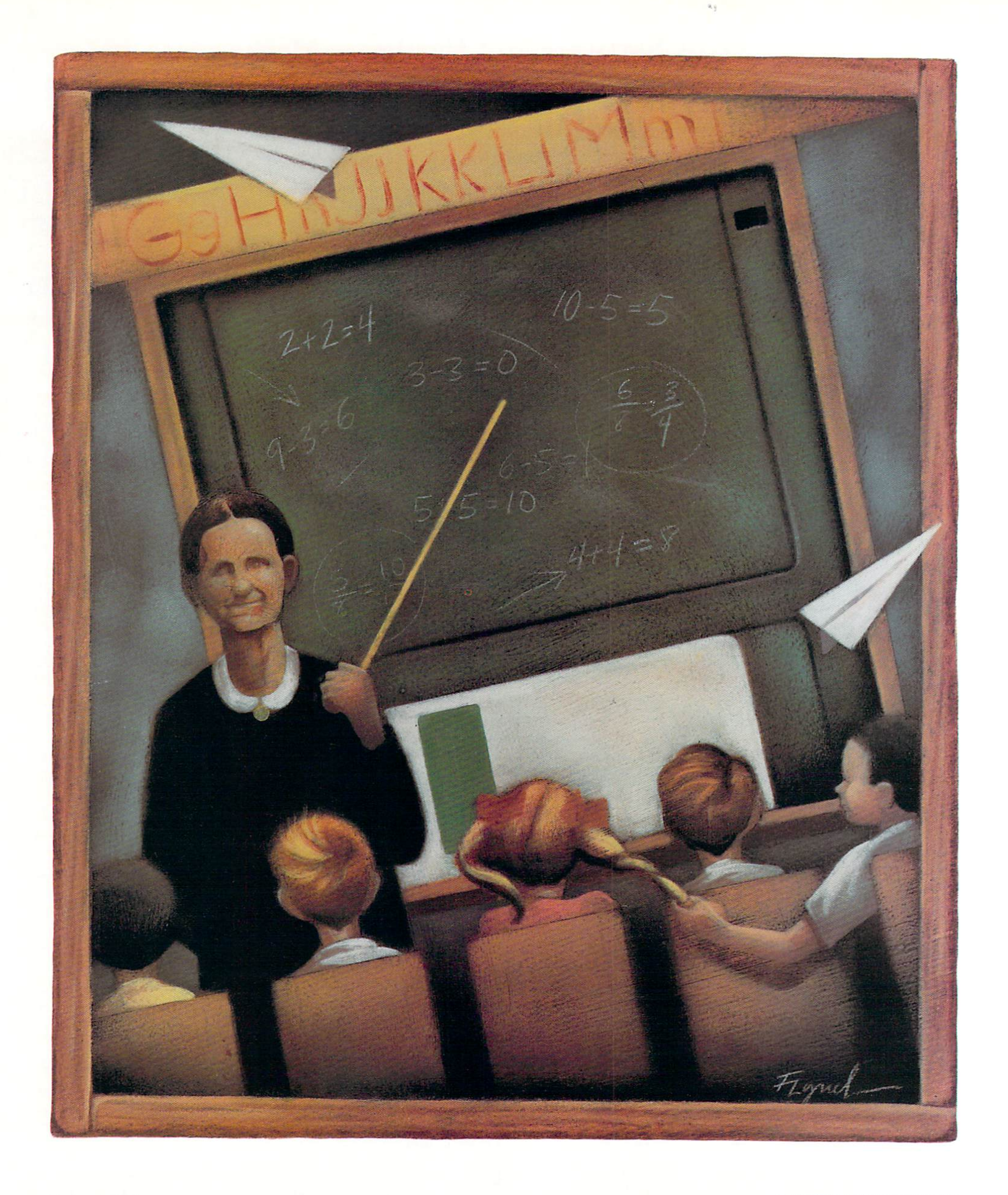
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ILLUSTRATED BY FRED LYNCH

Informed Choices:

A Guide to Evaluating and Selecting Amiga Educational Software

A computer-learning expert shares her opinions on what distinguishes good educational software from mediocre, and which Amiga packages best deliver the goods.

CHANCES ARE, YOUR child shares Winston Churchill's view on education. "I'm always ready to learn," Churchill said, "although I do not always like being taught."

All of us, from statesmen to small fries, learn most effectively when we are actively involved. Involvement makes the process more enjoyable—makes us *want* to be taught. Your Amiga can put your children on this active level, and the right software can keep them coming back for more. But how can a parent find out which packages encourage learning, and which are academically worthwhile?

What Makes a Program Make the Grade?

After looking at scores of educational software packages, I have determined a number of criteria to help you judge their various aspects. No matter what types of programs you choose, you can use these yardsticks to measure their quality. Keep in mind that what is good for one age group may not be appropriate for another.

At least three program characteristics—skill levels, subjects, and approaches—work best in multiples. Programs that provide multiple skill levels can not only accommodate your childrens' progress and help them grow further, but can be ideal for parents who have more than one child. In either case, they provide extra mileage. Another way to get more out of a program is to choose one that covers two or more subjects. Finally, giving the student a chance to work with the material from different angles keeps interest high. There can be no doubt that people generally learn better when a subject is presented in a variety of ways.

Programs that are too difficult to use and control discourage learning. The best programs present instructions clearly, thoroughly, and appropriately for the age level, and incorporate a help feature to prompt students who forget how something works. Input devices are an important consideration, too. Most preschool programs are mouse-driven and some employ icons rather than words. While the mouse is easy to use, it does not allow a child practice in developing keyboard skills. Ideally, a program will ►

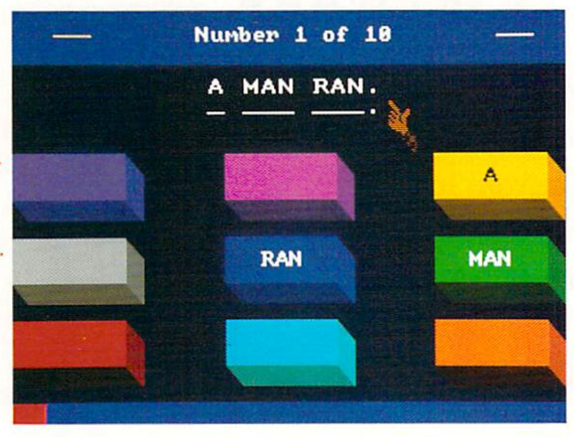
By Margaret Morabito

provide options for input via mouse or keyboard. A choice of control methods is helpful—especially for disabled students.

Another turn-off is inappropriate composition. I found several programs that require advanced reading abilities but are geared for preshcoolers in terms of content and packaging. Conversely, some programs tagged for grades six and higher combine appropriate academic exercises with immature composition. Look for programs that strike a balance in content and design.

Sight and Sound

One of the Amiga's strongest suits is its graphics capability. Programs that take advantage of this by adding color, pictures, and animation have a better chance of capturing and keeping a child's attention—especially with the younger child. More advanced students quickly tire of visuals that are childish, though, and in the upper grades, graphics are best incorporated into the program rather than serving only as peripherals.



Beginning Reading presents sentence construction.

Speech, music, and sound effects are highly effective in providing rewards for correct answers and reinforcement for incorrect answers. The Amiga is capable of producing quality sound, and most Amiga education programs have an option for vocalizing on-screen directions. Several companies (most notably AlohaFonts and Learners Image) have gone the extra step to fine-tune their programs' phonetic speech routines. Other companies (Hilton Android, for example) employ sometimes-incomprehensible monotonic speech—and their programs suffer. This robotic speech is especially problematic in early childhood and second-language programs. Still, even this is better than no sound at all. I am surprised to see companies such as Queue completely ignoring sound and graphics—two features that can add so much to a program.

Special Order

Some programs benefit from a modification option. Spellbound by Learners Image, for instance, lets parents add words to the program and adjust the Amiga's pronunciation of all words. This is noteworthy because it not only lets you expand the program but also accommodates accents and dialects.

Programs that involve decision making in any form can be very valuable. Many programs require students to make simple decisions, such as choosing a level for the problems they will work with. In other programs, children can see the effects of their decisions carried out; role-playing programs in particular allow children to make choices that affect the flow of the story.

Creative involvement—whether through poetry or music composition, scene construction, or something else—gets high grades in my book. Creativity packages encourage students to think, experiment, and enjoy. When selecting such a program, look for save and print features so you can share your child's (or your own) creations with others.

Finally, in situations that require students to perform tasks and answer questions, participants usually like to know how they are doing. Programs that take this kind of approach should offer some kind of scorekeeping capability.

The Honor Roll

With these criteria in mind and the help of two children (aged 10 and 6), I set out to find "a few good educational programs." I reviewed, tested, and analyzed 65 packages aimed at students of all levels—preschool through adult. The following—listed alphabetically according to the ages they serve—are my top picks.



Learning the Alphabet
MicroEd Inc.
$29.95
Preschool/Ages 3–4

Alphabet skills—from recognition of letters (both uppercase and lowercase), to their correct sequencing in the alphabet—are the subject of this package. Two activities require the child to unscramble four letters and place them into a given sequence. Computerized speech is an integral part of this mouse-driven program.



Match-it
The Other Guys
$39.99
Preschool/Ages 3–4

Young children can learn shapes and colors in this mouse-driven program. Match-It employs multiple approaches: two tutorials, matching activities, and a ►

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THE TOP 10

☐ **#23 Monopoly** - Excellent color and graphics in this adaption of the famous board game. Play against computer opponents. This program is definitely of commercial quality - a must! Requires 512K.
☐ **#27 Amoeba Invaders** - This fantastic game plays just like the original arcade classic, Space Invaders, but with enhanced color and digitized sound. You'll find more great games on this disk.
☐ **#128 Space Games** - Cosmoroids (like asteroids) and Gravity Wars highlight this disk just full of games.
☐ **#131 PacMan '87** - Better than the original. Great graphics, sound, and options. Keeps a top-10 list. May be our most popular disk.
☐ **#139 Bull Run** - Great Civil War strategy game. Disk also includes a small Data Base, Reminder, Grocery Construction Set, Will Kit, Label Maker programs.
☐ **#142 Q-Bert** - Fashioned from the popular Q-Bert game. Good graphics. Other Programs include MakeLabel, Nutty 9 game, Softball Status program, Hustle!
☐ **#77 Instruments** - Turn your keyboard into 25 different musical instruments.
☐ **#37 Business Programs 1** - The programs include an address book, an amortization program, talking mail manager, label printer, and much more.
☐ **#140 Virus Killer** - End the worry of having the virus on your disks. Excellent utility program.
☐ **#146 Calendar** - A very good personal calender! For special events, bill-tracking, etc.

THE BEST OF THE REST

BUSINESS/HOME

☐ **#116 Business II** - VC-Spreadsheet, HP-10c calculator, and more
☐ **#117 Business III** - DataBase, a bunch of great new fonts, RSLClock-great clock utility, AmigaSpell.
☐ **#152 Mail Manager** - Store names and addresses of friends, clients, members, etc. Has sorting and printing functions.

LANGUAGES/COMMUNICATIONS

☐ **#9 FORTH** - Two versions of the FORTH programming language.
☐ **#90 Modem Madness!** - Terminals include StarTerm, ATerm, and Kermit. Telecommunication utilities such as Archive are also here. Other types of programs and utilities are also included in the price of admission.

UTILITIES

☐ **#60 AmigaBasic** - Two programs that are truly of commercial quality, Cell-Animate and Graphit. Some Deluxe Paint picture files are also included.
☐ **#97 Tutorial Disk1** - A disk full of information and programs to instruct Amiga Programmers and users. Several C & ASM source files are included.
☐ **#98 Tutorial Disk2** - More of the best of Amiga Information.
☐ **#129 Amiga Utilities II** - A hard disk backup; Target-sounds a gunshot whenever the left mouse button is pressed; Dpaint Tutor; WinSize-change window size from CLI easily, and lots more.
☐ **#132 Videomaker Utilities** - This disk is packed with utilities to make your desktop videos easier to produce and more professional looking.
☐ **#133 DOS Helper** - Designed to help you with the AmigaDOS commands. Supports multitasking.

APPLICATIONS

☐ **#135 Applications II** - Long Movie-plays several Iff pictures, creating animation. QuickBase-a mail manager DBase. Persmait-a DataBase for keeping records.

SOUND/MUSIC

☐ **#18 Future Sound Demo** - Another great sound demo of digitized sound. Includes the wicked witch of OZ, breaking dishes, sea gulls, car crash, ducks, others.

SLIDE SHOWS

☐ **#1 Norman Rockwell** - 17 beautiful digitized Rockwell paintings in this self-running slideshow presentation.
☐ **#108B Juggler** - Famous demo that shows the beautiful graphics of the Amiga
☐ **#120 Pictures6** - Great Iff and Ham pictures that can be displayed from Workbench with their own icons.

GAMES

☐ **#38 Basic GrabBag2** - Around 25 programs of various types. Many of these are must-haves. At less than $.20 each, you can't go wrong!
☐ **#44 Games3** - More great games including Life, Vegas Slot Machine, Reversi, others.
☐ **#52 Basic Games** - Tons of ABasic games - discover some treasures!
☐ **#61 ABasic GrabBag** - Only about 100 of all types!!!!!
☐ **#102 Sinking Island** - Return to Sinking Island is an excellent adventure game. Well worth the price - hours of enjoyment!!! (By Terry Fike)
☐ **#114 Potpourri X** - Othello, A key-shortcut program for AmigaDos. Various new tools, automatic printer-driver generator, much more.
☐ **#118 Great Graphic Games** - Includes Missle Command, 3-D Triclops, Cosmo-asteroids clone, BrakeOut, Yatzee, Hack and more.
☐ **#121 Backgammon** - A great game from David Addison.
☐ **#122 Solitaire** - Two versions by David Addison.
☐ **#123 Cribbage** - Take on the computer.
☐ **#124 Milestone** - A great computer version of Miles Bournes by the author of Monopoly for the Amiga, David Addison.
☐ **#125 Othello** - A great 3-D version of this popular game.
☐ **#127 Wheel of Fortune** - Everythingbut Vanna! Great graphics and sound (even speech).
☐ **#137 Blackjack** - A full-featured game which allows pair-splitting, double-down, etc.
☐ **#148 Boulder Dash** - Very popular game with excellent graphics and has several challenging levels.
☐ **#153 Tunnel Vision** - A fantastic 3-D game with excellent sound, speech, and graphics.
☐ **#154 MAXIT** - A fun strategy game that you can play against a human or computer opponent.
☐ **#155 Battleship** - Play against the computer. Has great sounds like missiles and explosions.

GRAPHICS

☐ **#119 mCAD** - A full-featured computer-aided design program.
☐ **#136 Graphics2** - Border Set-useful for desktop publishing and video, making cards, coupons or menus, and your own artwork.

ANIMATIONS

☐ **#144 Christmas Animations** - 10 beautiful scenes and graphics with Fantastic sound.
☐ **#145 Animations 3** - More Great Animations. 3 very good demos plus 3 workbench pictures and Blobs.

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NEW ADDITIONS

☐ **#158 Sinking Island II (TWO Disk Set!) By Terry Fike** - Great text graphic adventure. 4 map scenes, underground chambers and much more.
☐ **#160 Pilot** - Learn all you need to know about Alaska with this pilot demo.
☐ **#161 Sorry** - Like the board game. Also includes bully and amazing.
☐ **#162 Video Poker** - All the fun of Vegas without the risk!
☐ **#163 Money & Trix** - Grab the money, avoid the tax collector. Also Trix, an arcade like game.
☐ **#164 Bank'in** - By Hal Carter, Keep your account in perfect balance.
☐ **#165 Wheel with Vanna** - Play against two computer opponents. The game with everything, including Vanna.
☐ **#166 HEdit** - A text editor. Try this one, you'll never use Ed again.
☐ **#167 Public Domain Catalog** - By Hal Carter, Keep track of all your disks.
☐ **#168 Grocery List** - Complete itemized printout of all your grocery items.
☐ **#169 Ledger** - Track income and expenditures. Great for small businesses and clubs.
☐ **#171 Escape from Jovi** - Escape from underground cave system of Jupiter.
☐ **#173 Mastermind** - Break the hidden code. A game for people who like a challange.
☐ **#174 1 or 5 Stay Alive** - A dice game for the daring, Don't get too greedy or you'll lose it all.
☐ **#175 ART** - Another great graphic disk. Volcano with burning lava. Ocean scene (sunrise to sunset)
☐ **#176 Galactic Worm** - Great arcade maze like game. Also super Brickout.
☐ **#177 Kamikazi Chess** - Lose all your pieces to win!

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concentration game. Reading abilitiy is not required, as the program "speaks" clearly to the child in easy-to-understand language.



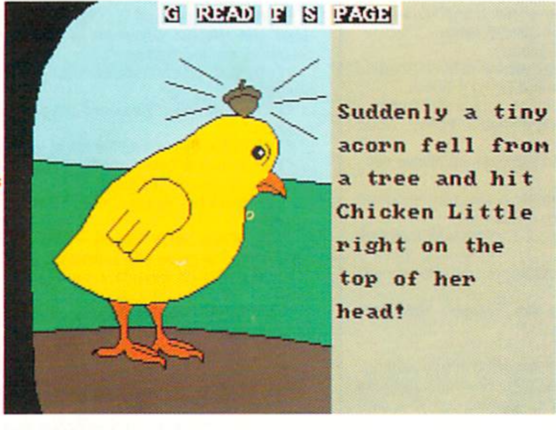
The Talking Coloring Book
JMH Software
$29.95
Preschool–K

The Talking Coloring Book uses multiple approaches to teach colors, as well as recognition and reading of color names. This program is fun to use, incorporates good graphics and speech, and gives your child a nice tool with which to draw, color, and print pictures. It requires little reading ability.



Kinderama
Unicorn Software
$49.95
Preschool–K/Ages 5–6

Using speech, graphics, and animation, Kinderama instructs young children in basic math, keyboarding, and some reading. Single-digit counting, addition, subtraction, letter location, and reading are incorporated into five different activities all based on the robot theme. Unfortunately, because this is the only Unicorn product that appropriately matches its content and design with the cognitive level of the child, it is the only one I can recommend.



Robot Readers: Chicken Little teaches reading basics.



Robot Readers Series
Hilton Android Corp.
$29.95 per package
K–Grade 2

The Robot Readers series is noteworthy in its traditional approach to reading instruction, but it suffers from poor-quality speech. Each program presents story classics complemented by fine graphics. The story text is displayed on screen, and as the computer "reads" to the child, the individual words are highlighted. The programs are easy to use, and more importantly, they offer several effective learning activities. For example, the child can click on any object in the picture to find out what it is, or on any word to hear its pronunciation.



Beginning Reading series
MicroEd Inc.
$89.95
K–Grade 2

The four-disk Beginning Reading series tutors children in word skills. The mouse-driven program incorporates quality speech. The computer reads a sentence aloud, then asks the child to order the component words, which are scattered on a grid, into the correct sequence. As children progress, they are presented with longer and more difficult sentences. Over 1000 words are included.



Designasaurus
Britannica Software
$49.95
K–Grade 8

Britannica Software makes science a participative sport by teaching about dinosaurs through creative discovery. In its animated simulation mode, students take the role of one of three dinosaurs to learn about survival in five different ecosystems. In another mode, children can build replicas of six dinosaurs (while learning the animals' biological classifications) or design their own. Finally, kids can print their masterpieces to conventional paper or to transfer paper (included in the package) that you can use to iron the design onto a T-shirt. Graphics and sound contribute to this quality program.



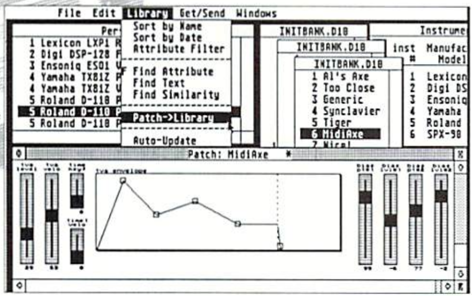
Discovery series
MicroIllusions
$39.95 per subject
K–12

This is the best educational game I've seen so far. Excellent graphics, animation, music, sound effects, and speech are used throughout and are tied directly to the programs' content. Each disk in the series uses the same storyline and format: You (the student) are aboard a spaceship, and are lost somewhere in the universe. Earning your way back home involves overcoming various obstacles (by answering questions) to find energy crystals hidden on the ship. The student sets the difficulty of the questions at the beginning of the game. Discovery topics include: spelling ►

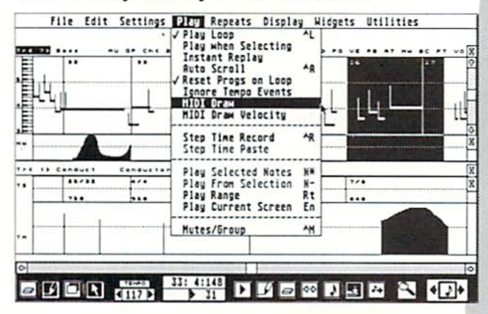
"What's it worth?"

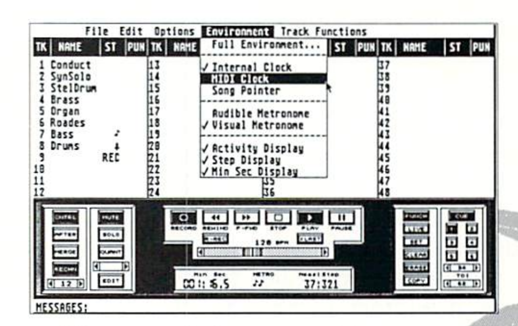
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***Mark Vail*, Keyboard Magazine**

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(grades 1–10), math (grades 1–7), math concepts (grades 9–12), geography (grades 9–12), and science (grades 9–12). The Discovery series is challenging and fun and keeps children coming back for more.



Uncle D's Con-SOUNDtration builds memory skills.



The Talking Animator
JMH Software
$49.95
Grades K–Adult

While The Talking Animator can be fun for all age groups, it is most appropriate for K–8 pupils. With it, students can create narrated animations. You begin by drawing a scene, then copy it to other screens where you can modify it. To add sound, the student simply types in words. Page flipping is accomplished by repeatedly pressing a key to advance, and while the speech is robotic, it is acceptable. Adults can use the program for presentations and video projects. The Talking Animator is easy enough for a kindergartener to use, and offers a save feature.



Uncle D's ConSOUNDtration
AlohaFonts
$39.95
K–Adult

Even though ConSOUNDtration is recommended for childen over the age of five, everyone from preschoolers to adults can sharpen his or her memory while learning and having fun with this concentration game. Superb speech and sound effects complement the program. The base package challenges students to identify letters of the alphabet, numbers, common objects, and more on four learning levels. An expansion disk ($24.95) for upper-level students teaches geography, states and capitals, and so on.



Math-A-Magician
The Other Guys
$39.99
Grades 1–8

A drill-and-practice program with four levels of difficulty, Math-A-Magician allows students to select the types of math questions they will answer: addition, subtraction, multiplication, or division of fractions or whole numbers. Math tables are provided for quick reference. After the student has answered a group of questions, the program introduces a magician who rattles off comical expressions after your answers. Math-A-Magician is fun.



Spellbound
Learners Image
$39.95
Grades 1–8

This educational game, built around a circus setting, uses a drill-and-practice approach and employs excellent speech. Three activities help the child to learn words: unscrambling, matching, and typing words that the computer speaks. The package provides a number of word lists, but also lets parents add words and modify the computer's pronunciation.



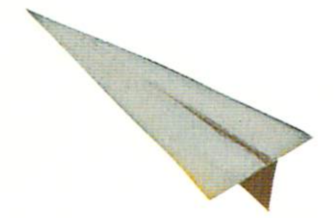
Image Spinning
MicroEd Inc.
$59.95
Grades 4–8

Image Spinning provides structure and suggestions to help students get started writing and illustrating their own poems. Students can begin by enhancing and modifying starter sentences. Once a poem is complete, students can choose a background from among eight digitized pictures, and select a font, too. Unfortunately, this valuable program has no save or print options. Other MicroEd programs noteworthy for making effective use of digitized photos are Across the Plains, a study of westward migration, and Introducing Maps; both cater to the same age group.

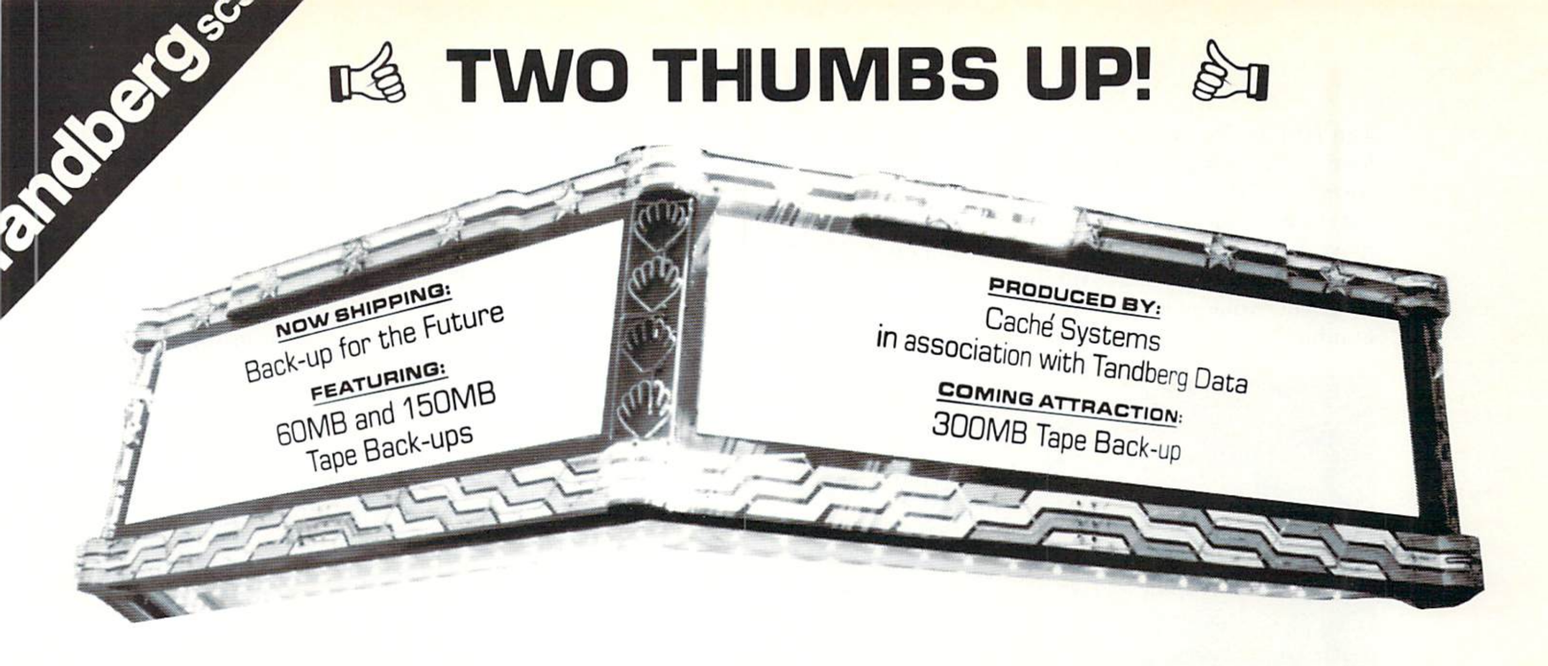


Adventure series
Queue
$39.93–59.95
Grade 2–Adult

Although Queue is prolific in Amiga educational software, many of its offerings are substandard. Its Adventure titles are good, however, in supplementing formal schooling. The Reading (I, II, and III address different age groups), World History, Amer- ►



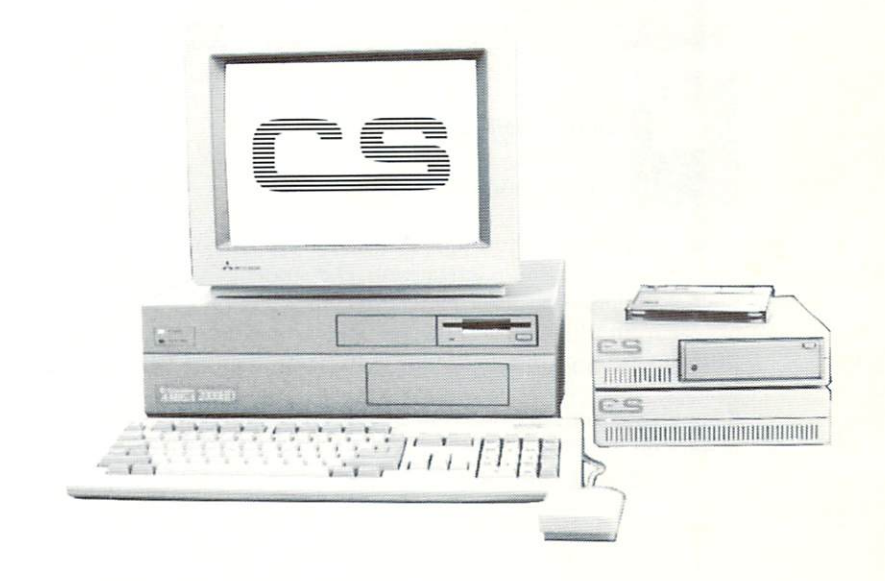
TWO THUMBS UP!



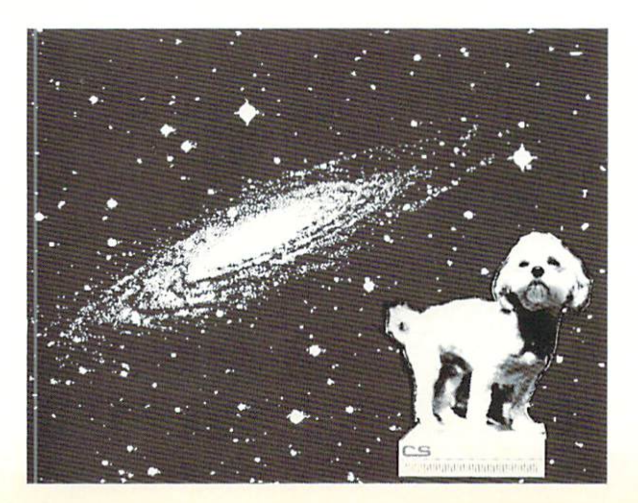
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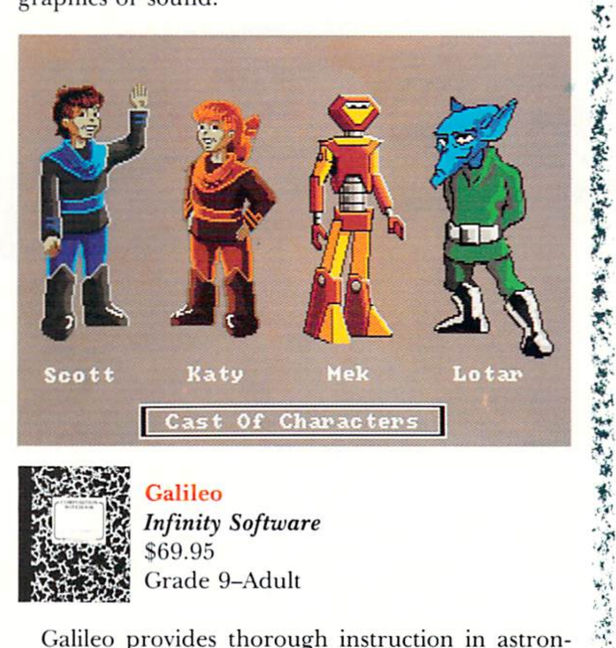




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ican History, Vocabulary (I, II, and III address different age groups), and World Geography (I–IV cover distinct areas) Adventure series are all text adventures based on real events and locations. To move through a story, students must answer multiple-choice questions relating to subjects they have studied in school. None of these programs are enhanced by graphics or sound.



The Discovery series encourages decision making.

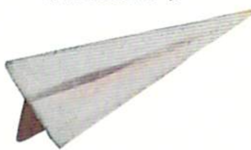


Galileo
Infinity Software
$69.95
Grade 9–Adult

Galileo provides thorough instruction in astronomy via an on-screen planetarium. The student can define a geographical location, direction, and time of year from which to view the sky, and the program provides the appropriate display. A telescope feature lets you zoom in to any object or area and move through space to get different angles. To get information on a star or planet, simply click on it. Galileo is very thorough and requires concentration.

Subject to Testing

Providing your child with various types of educational software helps ward off the boredom that is sure to encroach when only one learning method is employed. Some programs work best in certain situations. For instance, the MicroEd and Queue offerings provide a palatable means for reviewing classroom instruction and preparing for standardized tests. Creativity packages and educational games, on the other hand, encourage productive breaks from academics. ►



The Student Body

SEVERAL TYPES OF programs answer to roll call in the Amiga educational market. I have identified six categories. Regardless of the subject matter, all learning programs belong to at least one group, and many combine characteristics of two or more.

Drill and Practice: Despite its objectionable name, the drill-and-practice (i.e., repetitive demonstration and rehearsal) method can be effective. Many educational programs—especially elementary-level programs—rely on practice to make perfect. The best of this bunch are enhanced by creative graphics, animation, speech, and sound.

Games: Probably the best programs for motivating students, educational games downplay traditional study, yet place great value on the child's ability to answer questions correctly. Games make a child *want* to learn in order to win or get better scores. Many educational games have a drill-and-practice format, while others require decision making, problem solving, and reading comprehension.

Tutorials: Tutorials teach concepts and skills in various ways. Some present material and then quiz students on the facts; not surprisingly, these types of programs are often boring. Another type of tutorial is the discovery method, whereby students learn as they advance through a sequence of steps.

Simulations: Role-playing software provides a setting and circumstances, often enhanced by graphics and sound, with which the student must interact. Simulations can be tutorial in nature, introducing new concepts and honing skills as the student makes decisions and tries to solve problems in the new environment. Role playing emphasizes learning by doing, an excellent method of teaching.

Interactive Adventures: Similar to simulations, interactive adventures are text based rather than graphics oriented. Such software requires that the pupil study a particular subject (in a classroom or from a book) before entering the program. After such preparation, the student can answer questions successfully to progress through the adventure.

Tools: Programs you would not normally think of as part of the educational category—word processors, database managers, spreadsheets, and graphics and music programs—can serve as educators by easing the hardship of getting involved in new activities. This type of program is becoming popular as a means of learning to compose music, for instance, without having to play an instrument. □

—MM

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Your child is ready to learn and your Amiga is an able instructor. Make the most of this potential with the right software. Keep the selection criteria in mind, do some comparison shopping, and have fun! ■

Margaret Morabito is president of the Computer-Assisted Learning Center (CALC) and founder and director of the tutoring and continuing education centers on PC-Link, AppleLink, and Q-Link. A former college English instructor, she has used computers for teaching since 1981 and is the author of many articles on education via computers. You can reach her on line (PC-Link: PCLearning, AppleLink: LCenter, Q-Link: TCenter) or by mail at PO Box 734, E. Rochester, NY 14445.

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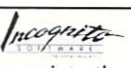
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#6

An occasional series of tips, techniques, and tricks for creating more imaginative Amiga graphics.



By Joel Hagen

Tricks With Text

YOU MAY BE surprised to discover that your favorite paint program is a highly versatile tool with which you can create a wide range of display effects with text. Many of the features we have discussed in this series in relation to painting and drawing techniques can also be used with text in strikingly effective ways. Text manipulation capabilities are not limited to only one or two specialized paint packages, either. All the effects presented in this article have been done with DeluxePaint II (Electronic Arts/$129.95), but most could also be produced with other programs, such as Photon Paint (MicroIllusions/$99.95), Deluxe PhotoLab (Electronic Arts/$149.95), and The Director (Right Answers Group/$69.95), or in conjunction with PIXmate (Progressive Peripherals/$49.95).

If you are new to the Amiga, be aware that you can customize the font directory in your paint package with your own favorite fonts. Font sets are available both commercially and through public domain disks. You can also create your own using font editors, such as the one on your Extras disk.

First, make a subdirectory in your font directory and copy the different point sizes into that directory. Remember to also copy the .font file for that style into your main font directory. These new fonts will appear in the paint package when you load the font directory from the menu option. If you have several disks full of fonts you like to use, you can name each disk Fonts and load it in dfl: when you run DPaint. DPaint's priority will look to that disk instead of the usual font directory. If you change to another Fonts disk, pull up the screen format requester and click OK. DPaint will reread the new Fonts disk. A large number of font styles in the directory, however, will cause problems in DPaint II, although not in DPaint III.

"Brushing" Up Your Text

The two illustrations accompanying this article show several examples of text manipulation. I work on a spare screen for these operations, typing out the text, then treating it as a brush. The palette has been set up with four to six values of the background color ranging from dark to light, the background itself falling mid-range. Be sure the background is transparent when you cut out the text (or, if you are using DPaint III, make sure auto transparency is on). You may find it handy to go to the Brush menu and select Handle at corner rather than the default center position. This lets you cut a brush and have it remain in place rather than jump as you complete the cut. With the text as a brush, you are ready to try some effects. Clear your work screen to the background color, and choose a foreground color that contrasts with it, or is a lighter or darker value of the background color.

The first example in Figure 1 is Outline. Set Prefs to Fast FB (fast feedback) and use the circle tool. Draw a small circle a few pixels in diameter using the text as a brush. This makes a blob of foreground color on the screen that may not look legible at all. Select another color from the palette for visibility and hit F2 to make the text brush become that color. Position the text in the center of the "circle" you just made and click the left mouse button to lay it down in the new color. Clicking the right button stamps out the text in the background color, leaving a hollow outline. The first

Your paint program is full of features that can also be used to create a wide variety of unique, distinctive-looking display effects with text.

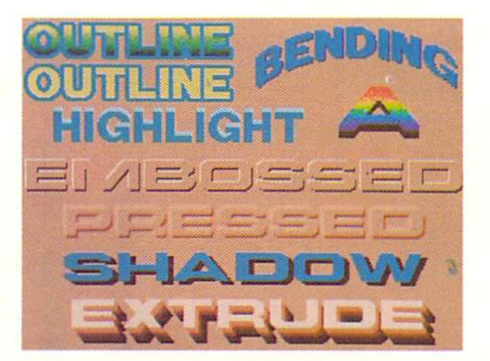


Figure 1. Examples of effects produced when different operations are performed on a text brush.

Outline example shows this simple stage, while the second shows the result of doing a vertical gradient fill in each letter. The right mouse button in the Fill tool brings up the Fill requester. You must establish a Range of colors in the palette that the gradient fill can use.

Below the Outline examples is Highlight. The text brush in F2 Mode, Color, is stamped down first in a bright highlight color, then shifted straight down a few pixels and stamped again in the desired text color.

Below that is a variation on this operation, the Embossed look. The text brush is stamped down in a bright value of the background color, then moved two pixels over and two pixels down and stamped down in a dark value. The brush is then centered and stamped in the background color. For the Pressed effect, cut out a rectangle big enough to completely cover the text. From the Mode menu, select Smooth and stamp the rectangle over the text. This softens it as shown in the example.

Me and My Shadows

The next example in Figure 1 is an old standby, the Drop Shadow. Text is stamped down first as shadow color, then offset and stamped again as foreground color. Usually a shadow looks best offset to the lower right. Extrude is a variation on Drop Shadow. Select the straight-line tool and draw a short line at a 45-degree angle in a shadow color. Now stamp the text down in a highlight color. The actual example shown is a bit more complex. Set up a Range of colors from dark to light, and set Mode to F7, Cycle. The brush cycles through the range as it draws the line.

At the upper right of Figure 1, you will see a text brush that has been vertically bent using the Bend option in the Brush menu. Below that, there is a block letter created using gradient fill with a drop shadow to give it a look of dimension.

If you are using The Director, Highlight, Embossed, Outline, Extrude, and Drop Shadow effects can be done in any font directly from the script without using IFF screens full of prepared text. This is a great memory saver. Simply specify font, color, and location before giving the text command, and repeat those commands with the color changes and offsets suggested here. For animation, this is also a powerful way to put text directly into any Anim if you run it with The Director.

Figure 2 shows the word "shadow" in several variations, illustrating a favorite effect of mine. The technique relies on using the Smooth mode, which we discussed previously in relation to the Pressed effect. Smoothing is done to a dark value of the text to soften the shadow edges into the background, giving a more natural diffuse look. Repeating the operation softens it further. (You can achieve the same effect with PIXmate using the Average operation in Image Process.) Compare these drop shadow variations with those in Figure 1. The hard, jagged edges of the shadowing in Figure 1 are gone, giving us quite a distinctive look, not often used in Amiga displays.

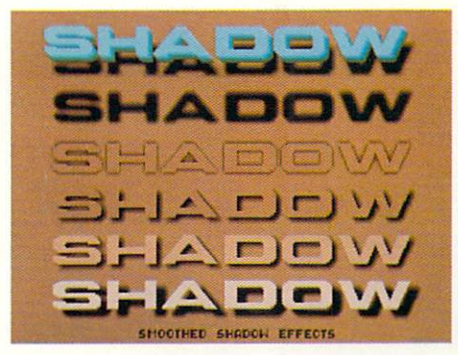
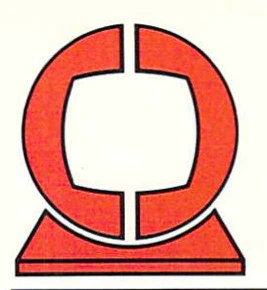


Figure 2. Using the Smooth mode you can produce a wide variety of text-shadowing effects.

These are only a few of the many interesting ways you can manipulate text in your paint program. Explore *all* the paint tools yourself with a text brush to discover the countless possibilities available to you. ■

Joel Hagen's credits include work in art, astronomy, science fiction, and software development. He will be happy to answer questions concerning "Accent on Graphics" if you include a S.A.S.E. when writing to him at 10512 Sawyer, Oakdale, CA 95361.



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the 1989 AmigaWorld MYSTERY SWEEPSTAKES

MURDER AT SARATOGA

Part II

IF YOU DECIPHERED our little numbers games at the end of Part I last month, you now know who the murder victim is. And you have the answer to the first question of the Mystery Solution: WHAT HAPPENED? If you didn't get the answer, you may still be able to deduce it from this month's clues, which begin on page 56.

In any event, when working on this month's clues, remember to keep a copy of last month's story and list of characters at hand. You will need them for reference and to piece together all the elements of the entire Mystery Solution.

This month you will be getting some help from one of the characters. We pick up the story the morning after the Travers Stakes, the Silverspoon Ball, and, of course, the murder. About 6 am the Saratoga police discovered the victim, who was found with numerous stab wounds that reveal a recurring pattern of three curved incisions in each group, all approximately four inches apart. Around 7 am the police called all of last night's patrons at Madigan's and all the guests at the Silverspoons' party, summoning them to an inquest this afternoon at 2 pm in the Grand Ballroom of the Gideon Putnam Hotel.

One such person, newspaper columnist and computer handicapper Andy Axfeld, was already suspicious of yesterday's events. If you remember from last month, Andy couldn't believe that longshot Hope's Last Chance was capable of winning the Travers and that Rambling Boy would finish a dismal last. After all, Andy has been doing his computerized race form figures for over 10 years and results like yesterday's almost *never* happen.

Andy has been on the phone and out about town all morning talking to people concerning the murder. Now, at noon back in his room, he has put together all his information in the form of a chronology of yesterday's events. He knows that somewhere within it lies the key to solving the murder, and that he—and you—will find it in the two hours remaining before the inquest.

All of the facts Andy has gathered are true, but only some will be relevant, while others will prove to be red herrings. When you have sifted through all of them (along with the elements of the story presented last month), and deduced the connecting links between the relevant ones, you will know the Mystery Solution: WHAT? WHO? WHERE? WHEN? HOW? and WHY?

When you do, fill out the Mystery Coupon (or a facsimile) at the bottom of page 55. All entries must be received by *Tuesday, August 15, 1989.* In order to give everyone an equal chance of winning—and to discourage anyone from "stuffing the ballot box" with multiple submissions—you may enter only once. Also, only one entry per return address will be accepted. Please remember that prizes are not transferrable. Send your entry to AmigaWorld Mystery Sweepstakes, 80 Elm St., Peterborough, NH 03458.

The *12 Finalists* will be selected from a random drawing of all correct entries held on Thursday, August 17, 1989. Listen for your telephone notification that day. Confirmation will follow by mail. Which of the 12 Finalists will win the *Grand Prize* is something we cannot reveal right now. (This *is* a mystery, after all, and you know there's always going to be a final twist or two.) All 12 Finalists, however, will be made aware of how the Grand Prize winner will be selected when they are notified on August 17.

A separate *Consolation Drawing* from the remaining correct entries will be held immediately after the Finalists have been drawn. Consolation Prize Winners will be notified by mail within two weeks.

The *complete solution* to the mystery, plus the names of the Grand Prize Winner, Runner-up Winners, and other Finalists, will appear in the *October issue.* A complete list of prizes will appear in November.

The odds of winning will depend on the number of correct entries received. If the prize is not claimed, a second drawing will be held to award it. Taxes and duties on all prizes are the sole responsibility of the winner. Prizes are not transferrable, nor are they redeemable for cash value.

No purchase necessary. All federal, state and local laws apply. Void wherever prohibited by law.

Anyone of any age may enter. Minors must be accompanied by parent or legal guardian to claim the prize. If the winner resides outside the US or Canada, the Amiga 2000HD prize will be shipped to the winner at our expense. There will be no Getaway Weekend in this case.

Employees of IDG Communications Inc., its affiliates, subsidiaries, advertising and promotion agencies, and their families are not eligible to enter.

Entry constitutes permission to use the winner's name, photograph, or other likenesses for promotional purposes without further compensation to the winner. Submissions become the property of *AmigaWorld* and cannot be returned. *AmigaWorld* is not responsible for lost, misdirected, or late mail. All entries received after August 15 are void and ineligible for the drawing.

The winner and his or her companion assume all risks and dangers incidental to traveling to and from the site of the Getaway Weekend, and agree that *AmigaWorld*, IDG Communications Inc. and its affiliates, and the organizers of AmiEXPO, are not liable for any injuries, loss, or other mishaps suffered during the period specified for the Getaway Weekend.

WORTH OF PRIZES



The Grand Prize

An Amiga 2000HD
Plus
A Getaway Weekend For Two

Your *Amiga 2000HD* includes a 40-megabyte hard-disk drive, one megabyte of RAM, and a color monitor. And we'll fly you and one guest to collect your prize at *AmiEXPO* in Santa Clara, CA, at a special presentation ceremony to be held Saturday, October 21, 1989.

You'll be the personal guests of AmigaWorld at the No. 1 Amiga show in the country and receive V.I.P. treatment from AmiEXPO organizers. Our *Getaway Weekend* includes two round-trip airline tickets (depart 10/20/89, return 10/22/89) and hotel accommodations (compliments of AmiEXPO) for two nights.

The Amiga 2000HD with monitor has been generously donated by GO AMIGO! of Redwood City, CA.

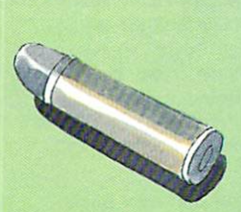
Runner-Up Prizes

Second Prize
An Amiga 500

Your Amiga 500 includes 512K RAM, one disk drive, and a color monitor. This prize has been generously donated by LightSpeed Distribution of Portland, OR.

Third Prize
A Xetec Hard Drive System

This 20-megabyte hard-drive system will be made available to you in whichever configuration is required by your system—Amiga 500, A1000, or A2000. This prize has been generously donated by The Software Shop of Worcester, MA.





Other Finalist Prizes

Fourth Prize
flickerFixer (MicroWay)

Fifth Prize
The Productivity Power Pack
Superbase Personal II (Precision)
Superplan (Precision)
A-Talk III (Oxxi)
SupraModem 2400 (Supra)

Sixth Prize
The Vital Video Pack
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Seventh Prize
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Eighth Prize
The Gorgeous Graphics Pack
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Ninth Prize
The Helpful Home Management Pack
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Seven different Amiga game favorites

Eleventh Prize
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Seven more Amiga favorites

Twelfth Prize
Super Seven Game Pack-III
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* This list does not include the sponsors—GO AMIGO!, LightSpeed Distribution, and The Software Shop—of the three top Prizes outlined above, nor the dollar values of those prizes. Nor does it include the value of the Getaway Weekend, which cannot be determined until the winner's location is known. However, using the manufacturers' suggested retail prices for the Grand Prize and the Runner-up Prizes, and an estimated value of $1500 for the Getaway Weekend, the total value of the Contest is $25,951 when these are added to the total of the list above.

MYSTERY COUPON

AmigaWorld Mystery Sweepstakes
AmigaWorld
80 Elm St., Peterborough, NH 03458
Entries must be received by August 15, 1989.

WHAT? (victim) ______________

WHERE? ______________

HOW? (weapon) ______________

WHO? (murderer) ______________

WHEN? (be specific) ______________

WHY? (be brief) ______________

____

Address: ______________

Name: ______________

Day Phone: ______________

Evening Phone: ______________

Chronology of Events—Saturday

6:30 am Preparatory to leaving for his stable and while his wife slept upstairs, Buford Langtry breakfasted alone in the dining room of the Gideon Putnam Hotel, 10 minutes' drive west of the racetrack. The Langtrys, residents of Louisville, KY, have taken a suite—two bedrooms, living room, and terrace—for the August season. Miranda Langtry is an accomplished actress in Louisville's famous regional repertory theater.

6:40 am Mindy Lee Silverspoon was up early and in the kitchen of the Canfield Casino, where she went over the party's food preparations with her young caterer, Preston Green. Green is the illegitimate son of Willy McDermott.

6:50 am A bright-colored sports car was seen pulling up in the Gideon Putnam parking lot outside the dining room window.

7:00 am Jeremiah Stone breakfasted on the verandah of his elegant residence across the road from the racetrack with Clara Gilsum. The two were discussing details of Clara's long-cherished Spa City Development scheme in which Stone is the major investor. Marjorie MacKenzie's Three Legs Farm is situated in the middle of the parcel of land earmarked for development.

8:00 am Everett Whitley, Jeremiah Stone, and Bill Walker were at Whitley's stable going over Rambling Boy's strategy for the race. Young Whitley, age 28, has worked for Stone since he was 15 and became head trainer at 21 upon the death of his father (Stone's trainer for 25 years). Jockey Walker, who weighs 112 lbs. and is left-handed, was about to take Rambling Boy out for his morning gallop when Harry Stone came to a screeching halt outside the stable in his red Maserati, nearly puncturing his front tire on a pitchfork on the ground nearby. His father was furious that Harry could have spooked Rambling Boy, but Harry laughed it off. Stone had spoken only yesterday about his son's carelessness and loose living, threatening once again to disinherit him.

At the stable of Syl Vestry, directly adjacent to Whitley's, the trainer was engaged in similar preparations with Marjorie MacKenzie and "Kid" Russell concerning Hope's Last Chance. Russell is right-handed and also weighs 112 lbs.

In the stable next to Vestry's, which belongs to Buford Langtry, jockey "Juice" Johnson waited for Langtry. The trainer had last night left him written instructions to meet him at 7:30 am. Langtry goes to his stable every night at 11 pm for a brief check on his horses. Whitley performs a similar check every night at 12 midnight, while Vestry does likewise at 1 am. Johnson got tired of waiting for Langtry, and left at 8:15 am. Johnson was once suspended by the Racing Commission for six months for consorting with known gamblers.

9:00 am At the opening of the Adirondack Trust Bank, which is five minutes' drive north of the racetrack, Jeremiah Stone, Buford Langtry, Harry Stone, Big Joey D., and D.B. Silverspoon were all in various lines at the tellers' windows. Jeremiah withdrew $50,000, Buford: $5000, D.B.: $10,000, Harry: $10,000 against his trust fund, and Joey D. cashed a $50,000 bank check.

9:10 am Marjorie Mackenzie arrived at Madigan's and met Davis Longfellow for breakfast. The widow confided that if Hope's Last Chance didn't win the race, she didn't think she could meet next month's mortgage payment on Three Legs Farm. Longfellow is a frequent dinner guest at Marjorie's—although he rarely stays past 8 pm.

Andy Axfeld himself was also at Madigan's talking with Jimmy "The Satchel" Mikaros. Jimmy has been denied entry to the racetrack's grounds because of his bookmaking activities.

9:20 am Big Joey D. and Cherry Flowers were seen driving by the Casino. Cherry got out of the car to take some pictures.

9:25 am Buford Langtry arrived at Madigan's and ordered a double bourbon, and engaged the proprietor in conversation. Jake Madigan was a bos'n's mate in the Navy during the Vietnam War.

9:35 am Cherry Flowers arrived at Madigan's to seek out Jimmy "The Satchel," and in a not-very-discreet voice placed a $10,000 bet against Rambling Boy. Cherry was seen at Madigan's the previous night where she introduced herself to Everett Whitley and engaged him in quite intimate conversation for over an hour.

9:45 am Cherry Flowers left Madigan's just as Marjorie MacKenzie got up to leave. Langtry headed over in the direction of the bookmaker, but spotted his old friend Davis Longfellow. The two men quickly became locked in deep conversation. Longfellow worked on *The Louisville Courier-Journal* before moving to Saratoga.

10:30 am Harry Stone returned to the bank and withdrew another $10,000 against his trust fund.

11:00 am Buford Langtry arrived at the Racing Secretary's office to withdraw his charge Dervish from the Travers Stakes. He explained that he had conferred with the horse's octogenarian owner, who is in Kentucky, and they both felt Rambling Boy was unbeatable. Seven years ago Langtry lost a $25,000 bet to Jeremiah Stone in a match race between their best horses.

12:00 Noon Buford Langtry returned to his stable, walked next door to Syl Vestry's stable, where Davis Longfellow was talking with Syl, but then returned to his own stable.

1:00 pm Jeremiah Stone, carrying an attache case, was seen arriving at Clara Gilsum's real estate office. After Stone left, Davis Longfellow, who had just come from the Mayor's office, was seen driving up to the front entrance, picking up Clara, and driving off to the Gideon Putnam for lunch.

1:30 pm Big Joey D. and Cherry Flowers arrived at the Terrace Dining Room at the racetrack. Cherry was wearing "Trouble" perfume.

2:00 pm Buford and Miranda Langtry also arrived at the Terrace, brushing past Big Joey D. and Cherry on the way to their own table. Miranda was wearing "Obsession" perfume.

2:15 pm Cherry Flowers told Joey she was going to the "powder room," went downstairs to the public bar, and met Harry Stone. Harry gave her a hug while slipping a brown envelope into her open purse. Harry once had a one-night fling with Cherry a couple of years ago when she was "performing" in Albany. Meanwhile, Willy McDermott was seen stopping at Joey's table carrying an open briefcase.

2:30 pm Jeremiah Stone and Everett Whitley arrived at their table at the Terrace after a final check on Rambling Boy. Stone had two quick martinis and then began a somewhat sentimental monologue addressed at Whitley to the effect that "it was seven years ago today that Everett's daddy had died" in that terrible training accident when he [Stone] had demanded that Whitley's father reshoe the stable's Travers hopeful because he had been kicking up such a terrible storm in his stall.

3:00 pm Miranda Langtry excused herself from her table to walk back to the stables. While walking by Everett Whitley's barn, she met Harry Stone, who said he had just fed Rambling Boy a couple of his favorite treats—carrots. On their way back to the Terrace, they met Whitley who headed toward the stable to check on some last-minute preparations.

3:30 pm "Kid" Russell stopped by Syl Vestry's stable to pick up his tack for the big race. As he approached the tack room, however, he heard Syl talking out loud about something that sounded like "Hope's Last Chance, indeed!" But no one besides Vestry was present and the trainer was sipping steadily at his hip flask of scotch.

4:00 pm Jimmy "The Satchel" Mikaros picked up the phone at Madigan's and called in his action on the big race to the syndicate: "$50,000 to win on Rambling Boy, $10,000 the entire field against Rambling Boy, and $5000 to win on Hope's Last Chance." Madigan, trying to listen at the end of the bar, scowled and walked out the back door.

4:30 pm Jockeys and trainers assembled at the paddock where the horses were being saddled for the big race. Bill Walker, with his perennial pocketful of carrots, offered Rambling Boy one but the horse turned his head away.

5:00 pm Marjorie MacKenzie, on her way to the paddock, met Davis Longfellow, who was seen putting his arm around her, leading her back to her box seat, and saying, "Don't worry, my dear, Syl's got him ready and it's all in God's hands now."

5:15 pm The gates opened, the horses were off, and in a swift two minutes Hope's Last Chance shocked the crowd with a 100-1 upset victory, while Rambling Boy trailed in last.

5:25 pm The ceremony in the Winner's Circle to present the Travers trophy to Marjorie MacKenzie was a totally chaotic affair because nearly everyone connected to both the winner and the losing favorite was in a state of shock. Davis Longfellow led Marjorie quickly away from the crowd after the presentation. Syl Vestry spirited Hope's Last Chance away from the photographers and back to his stable, meeting Buford Langtry who appeared to offer his congratulations.

From here on, the principals in our story retired to various pubs, hotel rooms, or wherever—reappearing at either Madigan's or the Silverspoon party later in the evening, as described in Part I. Andy Axfeld has no further information about their activities beyond what we already know, except for these two facts: Cherry Flowers was seen at the railroad station—alone—boarding the 1:30 am train out of town, and a red Maserati was seen speeding away from the Gideon Putnam Hotel parking lot at 2 am. ■

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AmigaDOS Utilities—Part 1

Trying to make a good thing better, Team info.phile takes a two-part look at some AmigaDOS utilities. Judging from this first batch, you may be better off sticking with your standard equipment.

By Mark L. Van Name and Bill Catchings

MOST OF THE time in info.phile we examine the tools that come as part of AmigaDOS' standard equipment. In this column we begin a two-part look at some of the products on the market that try to make AmigaDOS in general, and the CLI in particular, easier to use.

AMIGADOS EXPRESS

One of the biggest problems with the CLI is that it's so large that it can be tough to remember everything you need to know to use it. AmigaDOS Express aims to simplify that task with an on-line CLI manual. Bantam Electronic Publishing, a sister group to the division of Bantam Books that publishes the *AmigaDOS Manual*, markets this program, and its text is very similar to the text in the manual.

Fortunately, you don't have to wade through all that text in one file. Instead, you get to it via three pull-down menus that AmigaDOS Express installs.

The Projects menu has choices that introduce AmigaDOS Express, start a new CLI, and summon the Preferences tool. Unfortunately, that last option does not work with AmigaDOS 1.3. It counts on Preferences being in the root directory of your Workbench disk (as it was in AmigaDOS 1.2), but in 1.3, Preferences is in the new Prefs directory.

Sadly, AmigaDOS Express is not alone in its assumption of 1.2. All the products that we cover in this month's column are designed to work with 1.2. We realize that it's difficult and expensive for software vendors to keep up with new versions of AmigaDOS, but if they want to sell utilities, they ought to make that effort.

The other two AmigaDOS Express menus, DOS Help and Command, contain choices that cover general topics and individual commands, respectively. The options on the DOS Help menu discuss the basics of using the CLI, devices, directories, command formats, error messages, and the standard Amiga text editors. The Command menu covers all of the 1.2 CLI commands, breaking them into five groups.

All of the explanatory text appears in full-screen windows that have page numbers in the lower left and browsing gadgets—next/prev screen and exit—in the lower right. You can work in the CLI and, when you're stuck, click in the Workbench screen and get help from an AmigaDOS Express menu.

Of course, you have to ask yourself whether you want to spend $29.95 for on-line help, or whether you'd rather sit at your Amiga with the standard AmigaDOS manual and a stack of old info.phile columns nearby. We recommend spending the $29.95 on a good game and keeping the manual nearby.

SYSTEM MONITOR

Zen Software's System Monitor tries to give Amiga users a different kind of help. You install it by running a program ►

from the CLI. Don't try to install it by clicking on its program icon, by the way, or you'll get the infamous "Software error—task held" message, followed promptly by a visit from the guru.

Once you've installed the System Monitor, its System Window appears. That window shows the current CPU usage, as well as how much chip, fast, and total RAM you're using, all in four little bar graphs. This display is fine, but you can get the same information, in windows that are not quite as pretty, in the FreeMap and PerfMon tools that are standard parts of your 1.3 Extras disk.

The System Monitor does, however, offer a second monitor window—the Task Window. This window lists the tasks that are currently running in your Amiga, asks you to pick one of those tasks, and then displays information about that task. That information includes such exciting goodies as the task's current state, signal flags, address, and so on.

Let's face it, who cares about that stuff? Most of us are trying to get work done with existing Amiga applications, not writing new ones, and the Task Window's data does us virtually no good. Now, if you're trying to develop a multitasking application, then this information could be priceless. For most of us, however, it's not very useful, and we certainly don't think it's worth the $49.95 that Zen wants for the package.

DISK MAGIC

Disk Magic (DMH Technologies) tries to act as a CLI replacement, cramming all of its capabilities into one very busy window.

That window has two major areas. The top half is split vertically into two directory displays. One side is the source directory, and the other is the destination. Most file operations are based around these source and destination directories. You can change which is the source and which the destination, and you can also choose which directories you display in each side.

The lower half of the Disk Magic window displays a very large collection of gadgets. Each of these gadgets triggers an operation and brings up the requester window for that operation. Most of these operations can work on several files or directories at once. For example, you can select, with mouse clicks, a group of files and directories from your source directory, and then click on the Copy gadget to copy those files and directories to your destination directory.

There are gadgets for all the major 1.2 commands, as well as for a few shareware file-archival and compression programs that come on the Disk Magic disk.

Disk Magic's biggest weakness is that it is sometimes just too clever. The manual warns you that practically everything you can touch in its extremely busy window will trigger some function, and that's the truth. To learn to use Disk Magic to its fullest potential, you really have to log some serious time experimenting with it. It retails for only $49.95, but we have to give it a qualified recommendation. Disk Magic is interesting, and you might find it easier to learn than the CLI, but you should definitely insist on a trial run before you consider buying it.

METACOMCO'S SHELL

Remember Metacomco? That's right—it's the company that, in conjunction with Commodore-Amiga, wrote the original ►

AmigaDOS operating system. Well, the folks at Metacomco took a look at the AmigaDOS 1.2 CLI and decided that what we needed was not a window-driven CLI alternative, but rather a new, improved CLI.

Enter the Shell. For $69.95 it lets you edit your command line, recall previous commands, create aliases for text strings, make commands resident, create Shell variables, and even customize its operation courtesy of a special Shell startup file.

Sounds pretty good, right?

It should. You get all those features—at no extra charge—in AmigaDOS 1.3's Shell. Even if you have to buy 1.3 at full retail price, it's over $40 cheaper than the Metacomco Shell.

To be fair, there are some differences. Metacomco's Shell has a different history mechanism; it works like the one in Unix and is a bit more powerful than the one in 1.3. Its commands for handling variables are also a little more robust than 1.3's. It has Push and Pop commands that let you easily return to a directory that you just left. And, you can assign macro strings to any of your ten function keys.

But are those few improvements worth $69.95? No, we don't think so, especially when you consider that you really have to buy 1.3 anyway, if for no other reason than its FastFileSystem and fewer bugs.

Manufacturers' Addresses

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DMH Technologies
14873 95th Place
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Metacomco
5353 E. Scotts Valley Drive
Scotts Valley, CA 95066

Zen Software
815 East 7th Ave.
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Hang onto Your Wallet

Are any of these utilities really worth the price? That really is the key question for all these products. Utilities are nice to have around, but, like all other programs, they must justify their costs. On that basis, we can't wholeheartedly recommend any of these utilities. In our next column, we'll look at another batch of utilities. Maybe we'll have better luck then. ■

Mark L. Van Name and Bill Catchings are contributing editors to AmigaWorld. *Write to them at 10024 Sycamore Rd., Durham, NC 27703.*

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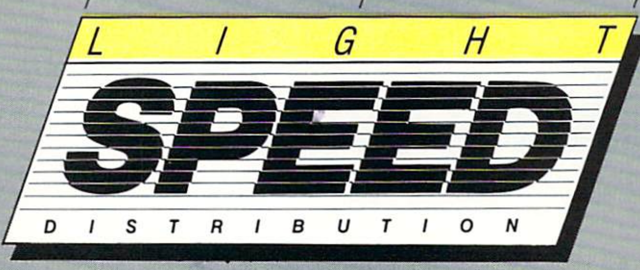
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Cheap Thrills

Double your fun for half the money with public-domain games.

By B.G. Hunter

YOU'VE SHELLED OUT about a zillion simoleons to buy your Amiga and a killer joystick, and you don't have much left for games, right? Don't worry: check out public-domain software. Disks cost about seven bucks a pop, and many contain several games. While some of these games are as good as any you can buy, some are pretty rough, and some just plain don't work. They include no printed documentation, customer support, or guarantees.

The lack of a guarantee coupled with wide distribution leaves the disks susceptible to viruses. I've had no problems with the leading disk distributors, but to play safe, you should follow three rules:

1. Make a new copy of your Workbench disk to be used only for playing public-domain games.
2. Make a copy of each public-domain disk before you use it.
3. When you finish playing, turn your Amiga off and reboot with your standard Workbench disk.

The procedure insures the worst a virus could do is to infect your "gaming" Workbench disk and public-domain disks, which are all backed up.

While in the public domain, some of the games are "shareware." The idea behind shareware is that, if you like the software, you send a modest payment to the author. If you like a game, donate the few bucks; your payment might encourage the author to write more good games.

PD Playground

Here are a few of my favorite games from the stack of over 40 disks that I examined. While often you can find a game on more than one disk and the networks, I'll mention only the disk from which I ran it.

Many of these programs are versions of popular board or card games—such as Sheldon Leemon's ►



Yankee or Rebel?

YachtC (Fred Fish #10). Yup, this is good old Yahtzee for one to four players. The graphics aren't great, but the game works and it's fun.

Another new twist on an old game is David Addison's Monopoly (Software Excitement #23). (You'll see Addison's name on a lot of these games.) While this version is faithful to the original, it also adds a few cute touches, such as a little train that chugs across the screen when you draw the "Ride the Reading" Chance card. You play against three computer opponents. One of them, Betty, thinks that railroads are "icky" and won't buy them. My only objection to playing with this bunch is that they are downright uncooperative when it comes to trading properties.

Addison seems to like card games particularly. His Cribbage program (Software Excitement #123) plays well, although I was able to stay even with it generally. Addison's two versions of solitaire, Klondike and Canfield (Chiron Conceptions Entertainment #6), are also enjoyable. Klondike adds scoring to standard solitaire: You pay $52 per hand, and you get back $5 for each card you play on the foundation. (I'm glad it's not real money.) Be careful how you use the mouse: Click too long and Klondike will flip over two cards. While Canfield does not offer scoring, it adds a few new elements to traditional solitaire, such as building on cards other than Aces.

The one problem with Addison's card games is that his four "10" cards have a T on them, not a 10. I want my cards to look like cards, whether they're on the screen or in my hand.

If you're a Hearts fan, try playing against the three computer opponents in Mark Slone's Hearts game (Chiron Conceptions Ami Arcade #3). I thought I was hot stuff until I tried its expert mode. Then my opponents ganged up and creamed me.

The same disk holds Bull Run by David Townsend. Bull Run is a Civil War battle re-creation similar to those hexagonal-tiled Avalon Hill war games that I could never get anyone to play. As either the Union or the Confederacy, you try to capture the town held by the opposition. The graphics are very good, the game is entertaining, and you can finish it in only 20 minutes.

MAZES, BLACK HOLES, AND MONSTERS

If arcade games are more your style, try PacMan 87 by Steve Jacobs and Jim Boyd (Software Excitement #131). An improvement on the basic PacMan concepts, the game offers three skill levels and five game-board levels. You use your joystick to avoid such stationary obstacles as stabbing knives, electric arcs, and flamethrowers, as well as the usual moving ghosts. You move among the game-board levels by using stairs. This game is better than many that have claimed my money. Get this disk!

Another interesting disk is Chiron Conceptions Ami Arcade #4. Its many games include Hari Wiguna's Wheel of Fortune, a version of Adventure, and weak renditions of Checkers and Backgammon. The real treat, however, is Orbit 3D by Richard Horne.

Who can resist sitting in front of an Amiga wearing 3-D glasses? I certainly can't. Orbit 3D's basic play is not spectacular. Your goal is to keep your ship alive as long as you can. You have a limited amount of fuel, oxygen, and torpedoes, but you can replenish those supplies by docking with the mother ship. Sound easy so far? The problem (no problem, no plot) is that you're orbiting a black hole. I never got very good—I kept shooting the mother ship instead of the asteroid—but I still had a great time.

A simpler but equally enjoyable 3-D game is 3D Breakout by Tim Kemp (DevWare FunDisk 0001). You bounce a ball against squares on the ceiling and walls. If the ball falls through the floor, you lose it. Sure, it's easy to play, but I just love watching the ball zoom at me and bounce off the front of the screen.

As usual, I've saved my favorite for last. Hack, by John Toebes and the Software Distillery (Fred Fish #62), is a version of the Unix adventure game of the same name. I've spent days fighting monsters and exploring the many floors of its 40-level dungeon. You play a character on a quest for the Amulet of Yendor (Rodney spelled backwards). You can gain and increase attributes, such as strength and longevity, by defeating monsters. You'll die without the proper equipment, such as armor and weapons. Keep your eyes open for wands, potions, and scrolls with which to experiment. To complete the game, plan to invest many hours, especially because Hack generates its levels and the functions of its objects dynamically.

PD Suppliers' Addresses

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PO Box 19474
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PO Box 215
La Jolla, CA 92038-0215

The Fred Fish Disk Collection
PiM Publications Inc.
PO Box 869
Fall River, MA 02722

Public Domain Software Resources
PO Box 7175
Loma Linda, CA 92354

The Software Bug
PO Box 8302
Somerville, NJ 08876

Software Excitement
PO Box 5069
Central Point, OR 97502

The game changes every time you play it.

This version of Hack is very well done. While most versions represent monsters with letters, here they're small pictures in a special font. Just be sure to set your Amiga to 60 characters per line rather than 80.

I also tried versions of Missile Command, Asteroids, Space Invaders, and other early arcade favorites. None were big winners, but all rekindled fond memories and were worth an evening or two. At these prices, you can afford to check out a lot of them. Buy a pile and have a good time.

Although not the type to be caged in an office, B. G. Hunter does skulk in occasionally to pick up his mail. Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

GAME REVIEWS

ALIEN SYNDROME

By Peter Olafson

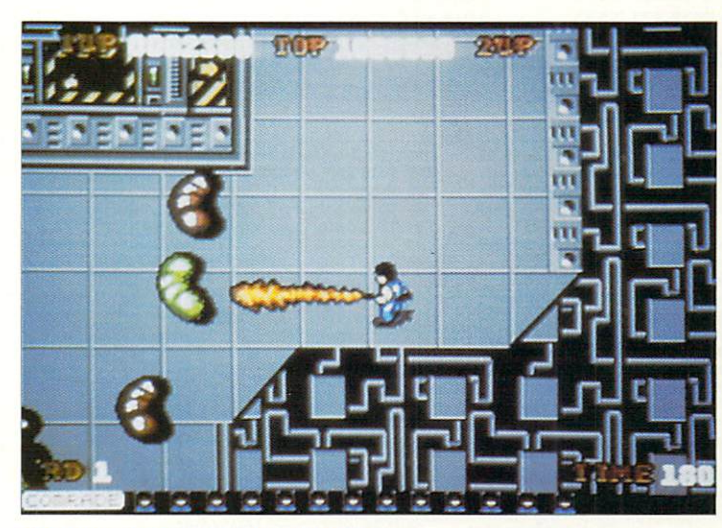
ALIEN SYNDROME is an arcade shoot-'em-up with a sci-fi theme, ported to the Amiga by Sega (via Mindscape). Aside from a couple of rough edges, it's a very creditable job.

Your task is to collect hostages from four levels of an alien-occupied space station before a time bomb detonates. You choose either a male or female character; both are well-muscled Stallone types, indistinguishable but for the colors of their jumpsuits and the pitches of their death screams.

This is not an easy game; in fact, it's so difficult that I would have appreciated the ability to resume play on the level where I last died. You're not just shooting creatures; as you make your way through the space station, you must figure out the most efficient course to travel for collecting the hostages, and then hightail it to the exit, all within a stingy time limit. There are maps on the walls, with the hostages highlighted, to help you out (nice of the aliens to post 'em, eh?), and an array of increasingly savage weapons available for the taking.

Even then, within that same time limit, you have to go one-on-one against a "super-alien." Hope you brought the right weapon. Hope you know how to use it. Hope you have the presence of mind not to be repulsed by the alien's boyish good looks and to concentrate on annihilating him. (Hint: The laser works well against the first one; just don't take anything for granted!)

There's a problem or two with details, but nothing hair-tearing. On the first level, for example, characters have difficulty turning corners if they walk too close to the walls—the kind of thing that can cost you when the enemy is in hot pursuit. After dying, I'd like to get back into the game a wee bit faster before my alien-slaughtering lust ebbs; there are no fewer than five screens between death and rebirth. And once a few aliens start meandering around the screen, there's a noticeable drop in scrolling speed.



Shoot the slugs; rescue the hostages.

This is a challenging, colorful game, though—difficult enough to test your mettle, but not so tough that you'll quit in frustration. *($49.95, Sega, distributed by Mindscape, 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667, 800/221-9884. Joystick required.)*

STAR WARS

By Louis R. Wallace

EACH STAGE OF Star Wars is a high-speed, 3-D flight simulation that is every bit as fun as the arcade original. The imagery even rivals the lightening-fast vector graphics of the stand-up version.

As Luke Skywalker, you have a three-part mission. First, dodge fireballs and destroy the Imperial TIE fighters in a space-based dogfight. Darth Vader's personal ship is in the fray, and while you can score extra points by blasting him, you can never destroy him.

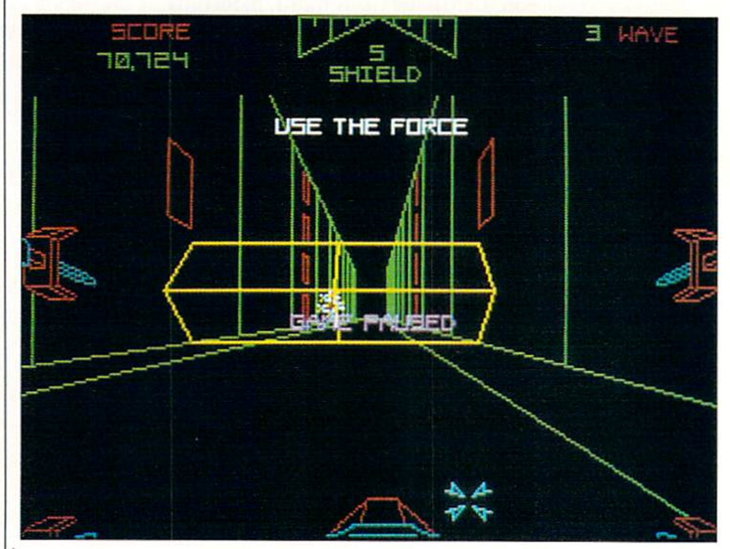
In phase two of the Deathstar attack, you fly over the surface of the Battle Station, trying to shoot the laser towers while avoiding fireballs from the towers and ground ►

installations. If you destroy all the laser towers, you get a bonus of 50,000 points and are lucky to be alive.

For the climactic sequence, you fly through the trench leading to the Deathstar's only vulnerable spot, the exhaust port. This is the toughest part yet: You must shoot and avoid fireballs as you go over and under an assortment of walls. If you manage to get a well-timed blast into the exhaust hole, you are rewarded with the sight of the Battle Station exploding. Miss, and you must start at the beginning of the trench again.

Once you have defeated the Deathstar, you begin again at a new level (there are 99 in all), this one a little tougher, with more ships and obstacles in your way. To make the game more challenging, you can start at level 1, 3, or 5.

Star Wars is an excellent port of the arcade favorite. It's fun, and I like it. *($39.95, Broderbund Software Inc., 17 Paul Dr., San Rafael, CA 94903-2101, 800/521-6263. No special requirements.)*



Trench warfare.

BALLISTIX

By Denny Atkin

MIX SOCCER, PINBALL, air hockey, and fast-paced arcade action and you get the apocalyptic ball game Ballistix. Each player tries to guide a puck to the enemy goal by blasting balls against it, causing it to ricochet across the field. Playing in an arena resembling the Boston Garden after a minor nuclear holocaust, Ballistix athletes have to contend with hyperspace tunnels, bumpers, pools of acid on the playing surface, magnets, red arrows that speed up the ball, and splitters, which fill the screen with dozens of balls, causing the puck to careen wildly about the arena. Winning offers no respite, only another level with new obstacles. If you want incredibly fast head-to-head action, Ballistix is your game.

While this is primarily a two-player game, you can play solo in a tilted arena where

the ball has a natural tendency to head directly toward your goal. Battling gravity, however, lacks the challenge and strategy involved with a real opponent.

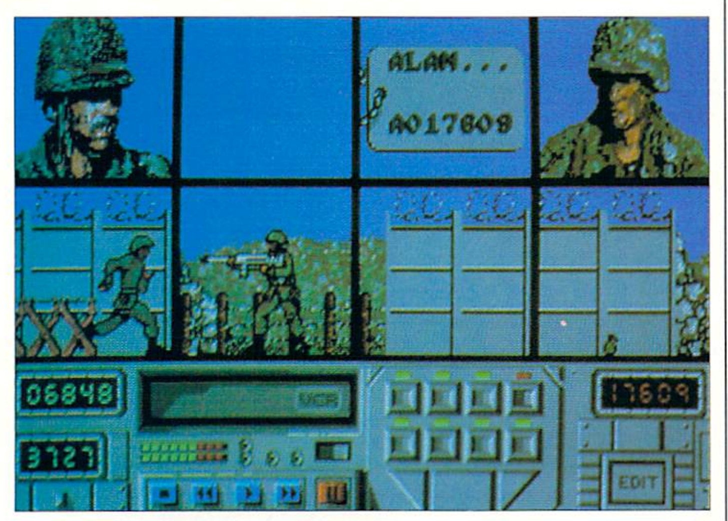
Ballistix isn't one of those games you'll master in a few days and toss onto a shelf. If you manage to conquer all 80 levels in the two-player competition (and the 50 in the solo game), you can customize the game with the two options screens. Just changing a single setting to make the game balls fire from your goal rather than from your player's arrow-cursor makes Ballistix almost a new game.

Behind Ballistix's outstanding graphics, great sound effects, and excellent techno-pop soundtrack, the game is well thought out and just plain fun. It's a standout in the flooded arcade-game market. *($34.95, Psyclapse, PO Box 483, Addison, IL 60101, 800/669-4912. Joystick required.)*

Combat Course

By Neil Randall

BECAUSE YOU'VE PROVEN your ability, you've been admitted into Combat Course for Special Forces training. You take the role of a top-notch soldier who must run five training courses of increasing difficulty. The drill sergeant watches, shouting orders and deducting points for incorrect procedures. Complete the series, and you go back to the beginning to run them more efficiently.



Beyond basic training.

You'd better be in good shape. First up is the Physical course, in which you jump over obstacles, climb over walls, crawl through drain pipes and under barbed wire, leap out of the way of guard dogs, avoid simulated enemy fire, and do ten push-ups whenever the drill sergeant commands. Next, in the Risk course, you must plant dynamite, jump over mines, learn to throw a grenade, glide along on pulleys, and avoid enemy machine-gun fire. The third basic course is Combat, where you engage in hand-to-hand combat, fire your SMG, sneak up on enemy guards, ►

and avoid enemies approaching from behind. The fourth course, called Combined, takes you through Physical, Risk, and Combat in turn, while the fifth, the Cobra Construction Set, links all types of obstacles in a random order.

You control your actions with a joystick or the keyboard; the keyboard is the best choice. The interface is frustrating and illogical, allowing you to do things, such as fire your SMG when you don't want to (at great cost in points) or let go of the pole you're hanging from, merely because you released the joystick button inadvertently.

When you've mastered all five courses, you can construct your own with the course editor. Building a course is time consuming but relatively easy.

Combat Course has an appeal, albeit a limited one. Its graphics and sound are excellent, and its perspective forces you to act quickly and intuitively. Unfortunately, running through course after course gets tedious, and mastering the interface takes longer than it should. Still, the subject matter is brand new—a fact that alone merits praise. Try before you buy. *($39.95, Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062, 312/480-7667, 800/221-9884. No special requirements.)*

HEROES OF THE LANCE

By Patrick Quaid

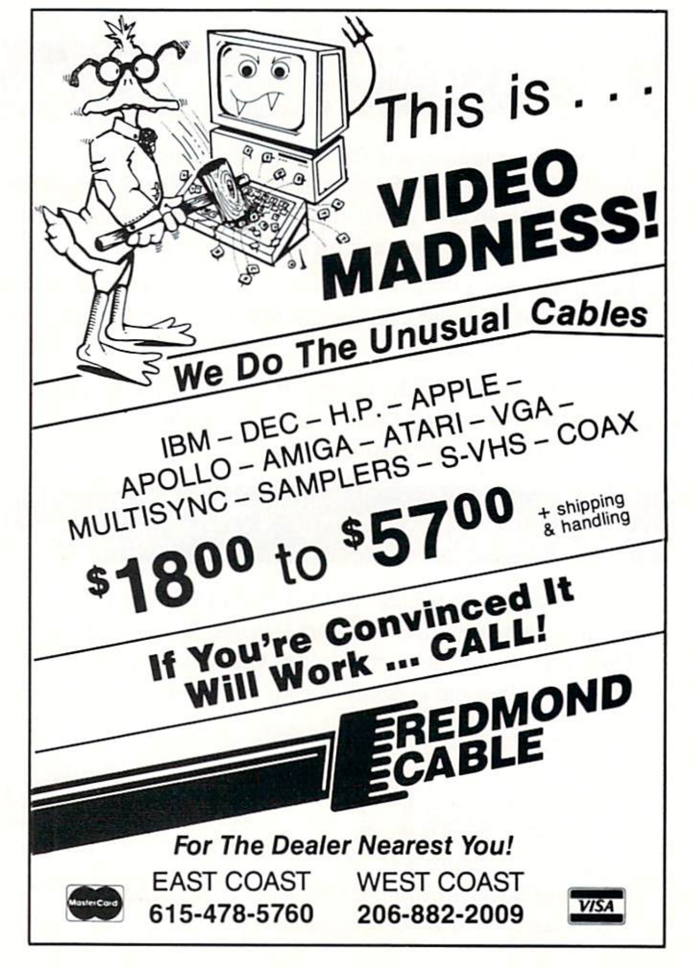
HEROES OF THE Lance is an official Advanced Dungeons and Dragons product published by SSI, but, contrary to what you might expect, it is not a role-playing game. It is, instead, an arcade game (or, as the manual defines it, an "action" game).

Your band of adventurers delve into some ruins in the hope of retrieving something called the Disks of Mishakal. If you run into anything or anyone on the way, kill it. Don't bother trying to reason with it or interrogate it—being alive in this game is a capital crime. This simpleminded approach is even more tedious in practice than you would think.

Combat, by far the most important aspect of Heroes of the Lance, is not as interesting as Advanced Dungeons and Dragons combat or even the combat of other adventure games. You control only one of the eight pre-defined characters in your party at a time; for the most part, the only character that will fight is the one that you are controlling at any given time. The other seven just watch helplessly as the first guy either prevails or gets clobbered. The one character you control simply chops away at his or her foe using one of three swings. You can't surround your enemy, fire volleys of arrows, or otherwise gang up on it.

The party moves left and right in response to your joystick or keyboard commands. Although the graphics are not up to the level we expect from Amiga games, they are the strength of this game, which tells you something about the rest of it.

The game also has several bugs. Every now and then it will have problems with the graphics of the character you control and draw garbage on the screen. This makes the



graphical interface unusable until you switch lead characters. There are other graphical anomalies that don't have much of an effect on the game, but detract somewhat from its limited appeal.

If you want a good adventure game, you can do much better than Heroes of the Lance. If action is what you want, get one of the Kung-Fu fighting games. They have similar story lines, and normally have more worthwhile combat. *($39.95, Strategic Simulations, 1046 N. Rengstorff Ave., Mountain View, CA 94043, 415/964-1353. No special requirements.)*

FIRE-BRIGADE

By Patrick Quaid

IN FIRE-BRIGADE, A reenactment of the 1943 battle for Kiev, you command the Soviet 1st Ukrainian Front or the German 4th Panzer Army. The computer or another person, either present or via modem, controls the enemy. You can begin at any of the battle's three major phases, and handicap the players according to their experience.

You control as much of the battle as you like, and your staff handles the rest. Because the game allows you to determine logistics, air support, frontages, objectives, pace of advance and withdrawal and several other factors, this administrative help is certainly welcome. As further assistance, the game is unprotected and comes with a well-written manual, three order-of-battle diagrams, and a map of the area around Kiev.

Fire-Brigade's realism compliments its flexibility. Combat takes into effect not only the type and current strength of the units involved, but also their morale, fatigue, and contact with their command and supply lines. The game also considers the quality of the field commander, whose inability to carry out your orders can be just as exasperating for you as it was for the historical generals.

This frustration stems from the fact that you issue orders to the Soviet Armies or German Korps, not to the individual divisions they command. You give the orders with the mouse at the beginning of the day-long turn, then passively watch the results. You must think of the battle in the same terms as the actual commanders did.

Fire-Brigade's realism and flexibility make it fun to play, but Panther Games could have come up with a more interesting battle. Of the battle's three major phases, the first is lopsided in favor of the Soviets. The second is almost as bad in favor of the Germans. These positions are fairly common in war, however, and the last part of the battle is fought on relatively even ground. Victory conditions based on the actual battle give both sides a reasonable goal, even though the eventual outcome is, after all, history. *($49.95, Panther Games, distributed in the U.S. by Computer Software Service, 2150 Executive Dr., Addison, IL 60101, 312/620-4444. No special requirements.)* ■

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from p. 16
machine, Superplan is a complete data-analysis and business decision-making tool. In addition to its primary function as a spreadsheet, the package incorporates a programmable non-relational database, a statistical/business charting package, and a project-management system. With its exhaustive number of capabilities, it is no surprise that the program consumes nearly 415K. While it functions adequately on a one-megabyte system, at least two megs of RAM is appropriate for multitasking a number of projects or working with very large spreadsheets.

Number Cruncher

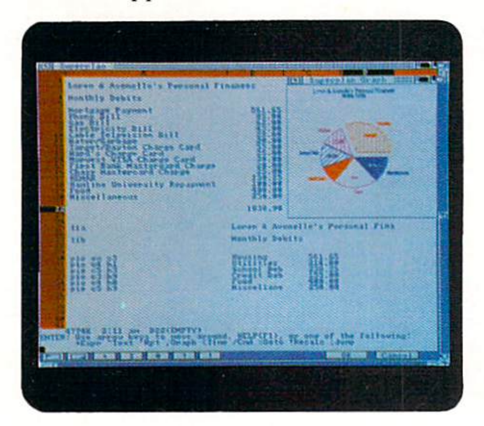
As with all spreadsheets, you enter data into Superplan by way of cells. Superplan sports a huge 1024 × 2048 cell matrix, and allows you to name cells and ranges of cells. The program protects cells from accidental deletion, and allows you to link spreadsheets so you can create three-dimensional-type applications (i.e., call on cells from other spreadsheets). Superplan also allows you to divide the display—either horizontally or vertically—so that you can easily compare two spreadsheets or two areas of a single spreadsheet that are separated by many rows or columns.

Superplan shines in terms of control options. You can navigate the program via pull-down menus, Lotus-like slash commands, or command options and screen gadgets. You can specify individual cells and cell ranges in formulae and operations either by typing their names or by clicking on them with the mouse. The price for this flexibility is limited display space for data; only 16 rows of cells are accommodated on non-interlaced screens and 41 rows on an interlaced display. A nice option would be to forgo all gadgets and command lines in favor of extra rows.

Superplan serves up a data-crunching smorgasbord to appease the huge appetites of calculation-intensive applications. The program includes a complete spread of mathematical, financial, logical, and temporal functions—74 in all. The only area in which I found Superplan deficient was statistical functions. While count, average, maximum, and minimum are all included, standard deviation, variance, and median are noticeably absent. These are easy enough to derive, however, and through all my tests I found Superplan to be a fast and accurate calculator. As a boon to those who work with data from multiple environments, Superplan can read from and write to such industry-standard file formats as .wks (Lotus 1-2-3), .CSV, .DIF, and the dBase II and III formats.

Query to and Fro

Superplan can sort items within tables on the basis of single or multiple cells within a row, conduct criteria-based text and numeric queries on ranges of cells, and copy or delete cells that meet a specified criterion. Additionally, several arithmetic functions perform calculations based on related data within tables. These features, in concert with Superplan's programmability, allow the program to function quite ably for small database applications. I would not recommend using Superplan to manage a database of more than a few hundred items with a limited number of fields, however, because its cellular nature is not conducive to speedy queries or data entry flexibility.



Picture this: object-oriented graphs.

Time in a Bottle

Superplan addresses the hot new theme of project management by combining the data-management and -analysis abilities of a traditional spreadsheet with facilities for doing time studies, projections, and scheduling. In linking these two concepts, the program helps you do detailed "what if" analyses on both time and resource aspects, and thus gauge the global effects of such events as a crucial staff member's illness or an overrun of cost or time in any area.

Superplan's approach to project management is both logical and comprehensive. Central to its time-study and -forecast portion is an ability to automatically construct a planning calendar or timesheet based on the smallest significant unit of time. Within the timesheet, human and capital resources are visually linked (by way of markers) to individual tasks according to the amount of time assigned them. From there, Superplan can calculate a "critical path"—a sequence of tasks that are dependent upon each other—and report numerous statistics. For procrastinators, a float function lets you to build in anticipated extensions to deadlines. Finally, Superplan's Gantt chart represents your project graphically in terms of time, resources, and tasks.

Pleasing to the Eye

Superplan exploits the Amiga's graphics prowess by allowing you to create stunning graphic representations of your data in nine forms, including variations of the traditional line, bar, and pie charts. In all cases you have complete control over text and title placement and sizing, element cross hatching, color, axis scaling and increments, grid, and footnotes. Superplan uses a plotter-like object-oriented system for rendering its graphics into a window separate from your data. This makes it possible to resize text and graphics precisely, and move them quickly and easily—even push them to the rear of the spreadsheet display. The object-oriented system precludes the usage of standard-bitmapped Amiga fonts in graphs, but because Superplan saves graphs in IFF format, you can easily add them via a paint program.

To create the graphs themselves, you use Superplan's graphics-command language to imbed directives into cells containing the data you want to represent graphically. While this system gives you tremendous control, it makes the graph-creation process time consuming, tedious, and difficult to master. A better approach would be an additional option for creating graphs through a menu-driven dialogue process that would imbed the commands automatically.

Building further on its graphic strengths, Superplan gives you a number

of print options. You can output spreadsheets to a disk or a printer formatted or unformatted, oriented vertically or horizontally, and with or without row and column designations. There are controls for changing fonts, pitch, page size, and line spacing, printing the date, page numbers, and more. These options save you from having to run Preferences every time you alter your print configuration.

Another bit of insight on the part of Superplan's designers was their inclusion of an alternative print mechanism. This is particularly nice as Superplan's object-oriented graphics facility allows your graphs to be scaled mathematically to your printer's best resolution and to your size requirements. Using this option I got great results on both an Epson-compatible dot-matrix and a Hewlett-Packard-compatible laser printer.

AUTOMATION

Closing out Superplan's litany of features is its three-way programmability. The Autos facility, which allows you to assign as many as 254 keystrokes to each ALT-, CTRL-, or function-key combination, works with all of your spreadsheets. Macros, on the other hand, reside in one or more cells and allow you to automate operations within a specific spreadsheet. They, too, can access any of Superplan's facilities, but provide more sophistication. You can set up Macros to start automatically once the host spreadsheet loads, use them to call autos or other macros, even create entire turnkey-type applications in which Superplan itself is transparent. Superplan's ARexx port allows the program to control other ARexx-compatible applications or be controlled by them. Using this facility, you could use Superplan to create invoices or graphs based upon data (or calculations from data) in your database package. (For more examples and a list of ARexx-compatible programs, see the article entitled "ARexx—The Missing Link" on p. 30 of this issue.)

ALL THIS

Fortunately, Superplan's extensive functions are eloquently documented in its 337-page spiral-bound, indexed manual. The book is divided logically according to topic and includes a number of illustrations and examples. A reference guide and a disk full of examples are also included in the package.

Although it is designed primarily for advanced productivity users, Superplan is accessible on all levels. The program's abilities are limited only by your imagination and ingenuity, and you will likely never outgrow Superplan's capacity. With some effort, you can even construct Superplan systems that rival mainframe applications in terms of power, and surpass them in terms of consistency and ease of use.

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DISK MAGIC

Pull a mouse out of your hat and make it perform CLI tricks.

By C.W. Mann

AT FIRST GLANCE, Disk Magic looks no different than the many other utilities that allow mouse-controlled access to CLI functions. This program, however, consitutes the most comprehensive effort I have seen to make the Amiga fully operable via mouse. What sets Disk Magic apart are its definable features, among them 14 definable directory gadgets and 108 definable menu functions. Engaging these options requires CLI literacy, though. Unlike most CLI eliminators, Disk Magic is geared not toward those who do not know how to use the CLI, but toward those who would rather not. It is a generalized DOS utility, file-management tool, and system-automation program all in one.

Disk Magic has 35 ready-to-use functions, including a disk-and-directory catalog feature, and the ability to dump files to screen or printer in Hex and ASCII formats. It supports ARC, ZOO, and PAK (the package includes these CLI-based public-domain archiving utilities and documentation for them) directly; the command strings these programs call on most often are resident in Disk Magic's code structure. You can run and execute binary and script files with a mouse click, as well, and Disk Magic offers wildcard capability for both moving files and copying files and directories en masse. Two other features that are nice but not novel are disk-format and -copy functions with safety options that you can set by editing the configuration file. You can work on your choice of an eight- or four-color screen, which features two windows side by side, one for your source device and the other for destination.

WATCH CAREFULLY, NOW

Disk Magic's differential is its extraordinary flexibility. With your own text editor, you can configure the program's data file of over 3100 bytes and thus perform almost any operation by simply clicking a gadget or selecting a menu



Make the mouse part of your CLI act.

item. Setting lag time between successive ARC, ZOO, and PAK functions is easy. So is specifying the interval between frames in a slide show (one setting allows you to click the mouse to change frames), and turning the sound on and off. Customizing the program beyond this point, though, can be tricky.

Programming a gadget requires that you assign it a name and set up a default path. Let's say that you do a lot of work on a partition of your hard drive called Waterfalls, and would like to be able to access that partition via a gadget. If Wa- ►

terfalls is a division of a subdirectory called Pictures which is in turn a subset of the Paint directory, you must edit the third line of the Gadget sub-table within the DiskMagic.data file to read Paint (this names the third button under the Disk Magic file windows Paint), then change the third line of the Gadget Path grouping in the same file to read DH2:Paint/Pictures/Waterfalls.

The same applies to each item in Disk Magic's seven pull-down menus. Once you decide how a menu item will be and what it is to do, you must edit the corresponding command sequence in the appropriate line of the default-file section. You can launch up to 108 full commercial applications (or DOS commands or other functions) from Disk Magic's pull-down menus in this manner. You have full control over literally every pull-down menu function (linked operations), but you must know how to manipulate AmigaDOS to succeed. . . and the manual offers no help in this regard. If you get it wrong, the system will do the wrong thing or fail to respond. Don't buy this program unless you know how to troubleshoot!

THE OPENING ACT

Disk Magic installed easily on my hard disk from its non-bootable floppy (the manual promises that future releases will boot from DF0:). It worked fine with a hard drive, floppies, RAM:, and Workbench 1.3's RAD:, and it multitasked perfectly with every system enhancement program I own. Every function I tried performed just as the documentation promised.

I met with the guru only once—while I was exiting my test run with over 300K free.

Disk Magic runs from its own non-interlaced screen, independent of Workbench. This is fine for most purposes, but the results of issuing a Run command (to start another program) from Disk Magic's CLI vary. While some programs open in front of the Disk Magic screen as they should, others stay glued to the Workbench screen sending Disk Magic's screen to the back. This is not Disk Magic's fault, but you should be aware that some of your experiments may fail.

MANEUVERING TO MANEUVER

The $5^1/_2 \times 8^1/_2$ stapled manual is fairly thorough in scope, but the phraseology is almost impenetrable, and misspellings and poor grammar are distracting. Reading the program is far easier than reading the manual, so I suggest that you keep the manual for reference and play with the program to unlock its secrets.

Disk Magic is helpful for those who need to manipulate lots of compressed downloaded files quickly, and programmers will find it useful for automating the entry of commonly used command lines. On the other hand, Disk Magic does not display entire trees of files and directories for quick viewing, and there is no direct way to manipulate the AmigaDOS protection bits from the program. People who configure Amiga systems for offices or industrial applications will find Disk Magic useful; my only reservation regarding this application is that Disk Magic provides no means for disabling AmigaDOS function gadgets and directory windows, and as long as they stay active, the system is vulnerable to curious mouse-button pushers.

Disk Magic is not perfect, but its impressive performance and flexibility lend hope for the future. It is an effective, high-level tool. Its base functions are as easy to use as those of other CLI utilities, and thus, while it is beyond the scope of most mouse-bound Amiga users, it offers a path for growth.

Disk Magic
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Minneapolis, MN 55369
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No special requirements.

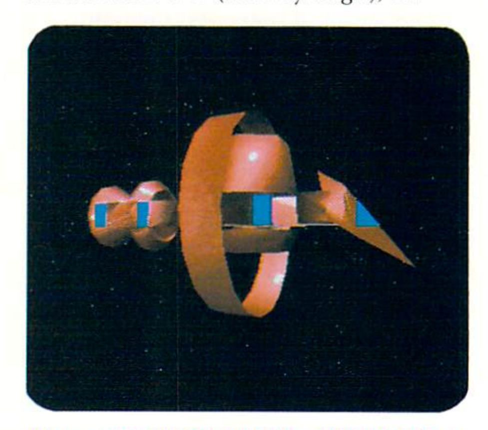
3-D DESIGN DISKS

Like a good cake mix, these disks can help you achieve great results in a snap.

By Wayland Strickland

CREATING A DETAILED three-dimensional object is not a quick or easy task, no matter which design program you use. Antic Software can save you time and effort with its Design Disks, a library of 3-D "clip art" pieces you can assemble together or combine with your own creations. The four-part series gives you a variety of subjects to include in your scenes, from futuristic spacecraft and robotic models to architectural components and the human skeleton.

All disks are available in three versions: one for use with VideoScape 3D and Modeler 3-D (both by Aegis), an-



I have seen the Future disk, and it contains a Ringship model.

other for Sculpt 3D, Sculpt-Animate 4D, and Sculpt-Animate 4D Jr. (from Byte by Byte), and a third for use with Turbo Silver (Impulse). I tested the VideoScape/Modeler version of each single-disk package. The disks are non-copy-protected, and each includes a Read_Me file containing directory assignments, animation tips, and so on. Because the objects are saved in text format, you can transfer them to other programs using Interchange by Syndesis. All objects are composed of triangles, which makes for fast rendering and permits easy conversion to programs (such as Turbo Silver) that employ this type of polygon, but slows down the process in VideoScape and Modeler, which use complex polygons.

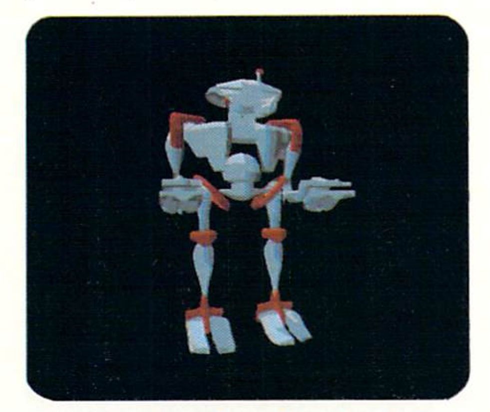
All of the design packages come with a set of blueprints—hardcopy diagrams of the individual pieces and, in some cases, assembled models with listings of the parts that make them up.

AN EYE TOWARD THE FUTURE

The Future Design Disk is a collection of parts you can combine to form complex

space-age objects and vehicles. The disk's directories group together similar types of pieces. They are: Crewmods (main bodies of space ships), Engines (engine parts), Wheels (wheels and tread sets), Wings (airfoils and solar panels), Tanks (fuel tanks), Frames (whose purpose is to connect pieces to the main body), and Ringdisc (circular airfoils).

The root directory contains several impressive space ships and robotic vehicles



Microbotics: the making of tripods and other automatons.

constructed from the various parts on the disk. A complete android is also in the root directory, although its components are not available separately. Strangely, the space station pictured on the Future Disk package is not included in complete form, and its axis, an extruded hexagon, is not provided in any of the directories. Nevertheless, a diagram of the space station is included in the blueprints.

In addition to detailing all available components, the Future Design Disk blueprints provide various sub-assemblies to demonstrate possible combinations of the individual pieces.

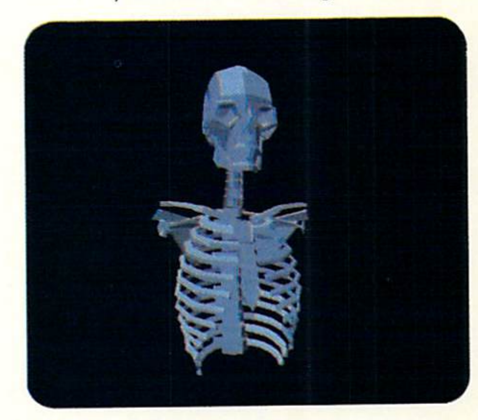
In a related vein, the Microbot Design Disk contains robot parts—numerous heads, bodies, claws, hands, legs, feet, treads, and so on—plus five intricate robot models. You can interchange parts for almost unlimited possibilites, or start from scratch and build your own automatons. The Microbot blueprints contain detailed drawings of the sample robots and a breakdown of the files they derive from. Also on the blueprints, you will find the number of vertices, faces, and component objects listed for each individual part and each assembled model.

From the Ground Up

The Architectural Design Disk is full of walls, doors (with frames and without), roofs, arches, columns, skylights, and staircases. Like the Future Disk, each category has its own directory. There are 11 arches including circular, gothic, paragothic, and one called shell. Roofing includes domed, extruded, and four square styles. There are also four types of towers and six varieties of columns.

Wall frames allow you to create skeletal structures. Walls, with and without openings for doors and windows, are included. There are also eight kinds of doorways and doors, and nine types of windows—including round, square, triangular, half, and full. Skylights come in three shapes: Two are square, one is rectangular, and one is hexadecimal. Probably the most impressive object of this package is the spiral staircase; a four-step standard staircase is also provided.

The Architectural blueprints are very well drawn, although they do not include any mention of the objects' relative



HeadTorso takes it from the top.

size—a feature that would make it easier to use them with homemade objects. There is only one demonstration object included in this package, however—on Page Three of the blueprints. There are several completed structures, a deck house, a plaza, and an ordinary house. Here too, it would have been useful for the manufacturer to include these completed models on the disk, providing an ►

example of how a complex, finished object may be accomplished.

Dem Bones

The Human Design Disk provides skeletons for both genders separated into three main object files. The first file, HeadTorso, contains the skull and upper thorax. ArmsHands includes left and right arms and hands, while HipsLegs is composed of the pelvis and both legs.

A joint file identifies the locations of joints within the human body. There is also a right hand, which is well-represented except for the carpals; while the wrist is actually made up of 6–8 individual bones (carpals), the 3-D object represents them as a single bone. Finally, the two files called WatchMan and WatchWoman are very simple geometric block figures. These are useful for projects that do not require great detail, as they save you from waiting for the computer to render each bone.

The skeletons do a good job of representing the largest bones and their placement within the body. They do not, however, show such details as the smaller joints, bone processes, foramina, and so on—even though these are labeled on the blueprints in some cases. While the vertebrae look good, the ribs are a bit squareish, and the feet are positively without definition—they look like shoes!

The blueprints contain Latin terminology that is both common (humerus) and not as well-known (os coxae). This can result in confusion, especially if this package is being used to teach basic anatomy terminology: The humerus is a specific bone, while the os coxae is a region or area of bones. In addition, the blueprints attempt to label bones that are indistinguishable, at least for these drawings.

All Together, Now

The process of assembling pieces to create complex objects is much easier in Modeler 3D (which is an especially adept object editor) than with VideoScape (whose forte is rendering). In addition to more completed objects, I would like to see further animation tips included on the disks. My complaints are minor, though; I think a lot of people will find Antic's Design Disks helpful.

Future Design Disk
Microbot Design Disk
Architectural Design Disk
Human Design Disk
Antic Software
544 Second St.
San Francisco, CA 94107
415/957-0886
800/234-7001
$34.95 each
Compatible 3-D software required.

Tool Box EEC-2120, EEC-2520 Phoenix PEC-2500

Two slots are better than none.

By Morton A. Kevelson

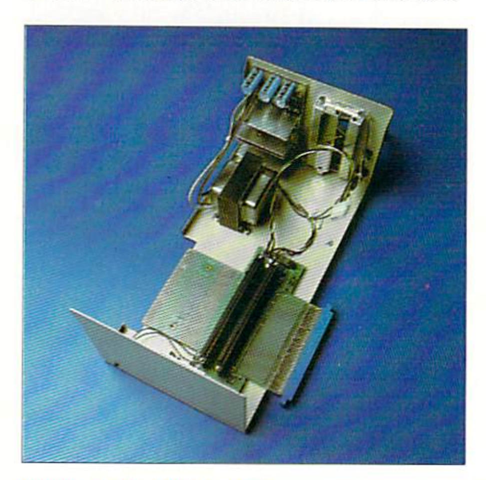
No matter how hard you try, you just cannot get Amiga-2000 style peripheral cards to function inside an A500 or A1000. There's no need to despair, though; Expansion Technologies and Phoenix Electronics both offer boxes that hook up to your expansion bus and accommodate Zorro 2 peripherals. I recently tested Expansion Tech's Tool Box models EEC-2520 and EEC-2120, which let you use two 100-pin boards with the Amiga 1000 and A500 respectively, and the Phoenix PEC 2500, which is identical to the Tool Box 2520—except for the logo. There is a good reason for the similarity: All three boxes are manufactured by Phoenix Electronics (Phoenix makes a model PEC-2100 for the A1000, as well, and offers the option of a buffered 86-pin coprocessor slot on both units).

Measured Up

All the cases are smaller than the average bread box—7½ inches wide and 14¾ inches deep—and rest on four rubber feet. The A500 style measures 6¼ inches in height while the A1000 box stands 7½ inches. Installed on the Amiga 1000, the box extends about 6 inches beyond the back of the computer, while the front of the Amiga 500 unit protrudes 1½ inches forward of the expansion slot.

Inside each box's sturdy aluminum housing, a double-sided circuit board holds a pair of gold-plated 100-pin slots. In addition, each chassis contains one 86-pin connector to the computer's expansion bus (also gold plated) and a wave-soldered pass-through port, which allows you to connect other peripherals to the outside of the expansion box. The fine, lightly-insulated wires that run across the bottom of the case call for you to take care while inserting expansion cards.

A power connector for a hard disk (which makes it easier to join the drive with a controller) was installed on the circuit boards of both the PEC 2500 and EEC-2120, but not on the EEC-2520. (According to Expansion Technologies, however, all boxes are now shipped with internal power connectors.) The only way to fit a hard drive in any of the boxes is to configure it as a hard card. Inside the A1000 chassis, a hard card should be installed in the slot furthest from the bus; in the first slot, a hard card blocks half of the second slot. In the 500 version, a hard card fit fine in either position.



Inside they're all the same.

Back of the Box

The box's rear panel looks a bit like the back of the Amiga 2000's expansion section: Two cutouts (on the A2000 there are seven) allow you access to the installed cards—so that you can connect a 5¼-inch drive with a Bridgeboard, for instance. While the A2000 comes with metal plates to cover each slot, however, the Phoenix box arrived with just one, and neither Expansion Tech package included any such covers. Normally, when

you buy an expansion card that requires connection with something outside the chassis, you get a plate complete with connector. For boards that require no such connection, however, a metal strip may or may not be supplied. None of the units came with covers for the pass-through connector, either. Leaving these ports exposed not only allows leakage of radio-frequency radiation (which can interfere with other electronic devices nearby), but leaves the box—and the cards inside—vulnerable to damage by stray paper clips and the like.

Also on the rear panel of each box is an AC fuse holder. Labels on the EEC-2120 and PEC 2500 holders indicate that the fuse is one-half amp, while the EEC-2520's label calls for a five-amp fuse. I pulled the fuses out and found two were five amps and one was a half amp. I am disappointed by the apparent lack of quality control, and suggest that you verify the fuse amperage on your unit, should you buy one.

Juice it Up

The 18-gauge power cord is seven feet long, and terminates in a standard three-prong, grounded plug. An LED (light-emitting diode) on the unit's lower left corner glows green to indicate that the power is on. There is no power switch and none of the instruction manuals mention a preferred power-up sequence for computer and expansion box.

While the Expansion Technologies boxes come with internal power supplies, Phoenix sells the units with and without power supplies. A power supply of some kind is essential given that the Amiga 500 has no reserve power capacity and the A1000 has very little. Although the manuals discuss various alternatives for hooking up your own supply, I recommend buying the system complete. You would have to mount a third-party power unit externally (there is little extra room inside the case)—a makeshift setup.

According to Expansion Technologies, the power supplies built in to the units I tested put out both five and 12 volts (but not −12), and are rated at four amperes for five volts and two amperes for 12. This is the equivalent of 44 watts, which should be adequate for powering a pair of Zorro-II cards and a hard drive plus one or two boards on the pass-through connector. To be safe, you should check the power requirements of your cards with their manufacturers.

The power supply is based on two low-power, MC1723, adjustable-voltage regulator, integrated circuits. Each circuit is boosted by a pair of 2N3055 bypass transistors encased in metal and mounted on aluminum heat sinks. While short-circuit protection, current limiting, and thermal sensing are incorporated in the MC1723s, I would like to see fuses on both outputs to further guard against component failures. In the unlikely event of a short circuit in the transistors (their usual failure mode), excessive voltage would be applied to your installed expansion cards, and could render them useless.

One Size Fits Some

The box's unbuffered design allows it to support only one DMA device. Lack of buffering also means that configuring information must pass from one board to the next. Thankfully, the circuit board has a jumper block you can set to allow use of the second slot while the first is unoccupied. A second jumper lets you run peripherals connected to the outside of the chassis while both slots are empty.

Compatibility with third-party expansion cards is an open question, as there are subtle design differences between the Amiga 2000's expansion bus and the unbuffered expansion chassis. These differences are, according to Expansion Technologies, less problematic on the A500 than on the A1000; the company has found no problems with any memory boards or hard-drive interfaces in the A500, although Microbotics recommends that their HardFrame not be used in either box. For the A1000, Expansion Technologies' spokesperson mentioned that the Amiga 2000 version of LIVE! (A-Squared) would not work with the Tool Box, and I had no luck running the LIVE! 1000 version on the pass-through connector either. The Tool Box manual lists several products that have been found to be compatible with the EEC-2120: Expansion Technologies' Flash!Card, the Phoenix HCA SCSI hard-disk controller, the Microbotics two-meg RAM card and 8-UP! board (B version), and the Commodore A2090A controller and A2058 card. I tested the A1000 Tool Box with a Micron two-meg ►

board and had no problem most of the time, but occasionally got a guru message while booting up.

The Expansion Technologies manual stresses the importance of grounding your Amiga 1000's PAL chips, as they have found this affects the expansion port (although I have used other peripherals and expansion devices before on my A1000 without problem). I suggest that you test the expansion box with any peripheral cards you own or intend to buy before committing yourself to a final purchase. If your chosen cards work, the flexibility the expansion boxes provide will be worth the price.

Tool Box EEC-2520 and EEC-2120
Expansion Technologies
46127 Landing Parkway
Fremont, CA 94538
415/656-2890
$259.95 (with power supply)
No special requirements.

Phoenix PEC 2500
Phoenix Electronics
PO Box 156
Clay Center, KS 67432
913/632-2159
$179.95
$254 (with power supply)
No special requirements.

X-Shell

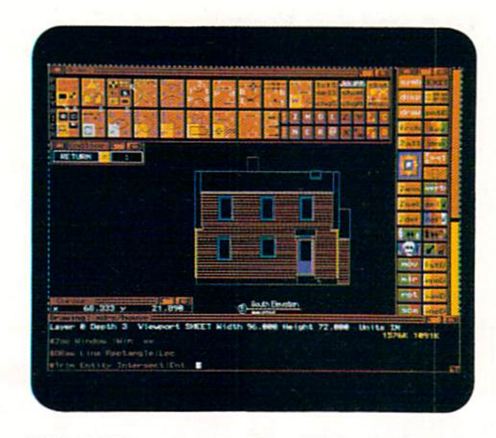
Hang on, X-CAD, it's X-Shell to the rescue!

By Stephen Ellerin

AS THE SHELL of an egg allows us to handle the stuff inside without getting a fistful of yolk, a "shell" program helps us to handle its base application more easily. GrafX Computing's X-Shell provides a convenient, mouse-driven interface for the user of X-CAD (Taurus), serving as an efficient command console for a powerful, but very difficult-to-use CAD program that left this reviewer with very sticky hands when evaluating it as a stand-alone product. [*For the author's review of X-CAD, see the June '89 issue of* AmigaWorld, *p. 76.*]

X-Shell begins its life-support assistance to X-CAD long before you ever boot it up on your Amiga. The effect of the confusing documentation that made X-CAD so hard to work with is largely negated by X-Shell's exemplary manual—a well-written, logically organized booklet in tabbed, loose-leaf format complete with an index. Unfathomable X-CADese is here translated into readily comprehensible English. You will still need the X-CAD documentation to fully implement the base program; but now you have able-bodied reference assistance to make that job more manageable.

If you've already been using X-CAD, jump directly into the X-Shell manual for clarification of X-CAD material and instructions for putting X-Shell to use. If you're new to X-CAD, start by briefly perusing the X-Shell manual to gain some familiarity with terms and capabilities. Then skim X-CAD's documentation. Finally, go back and read X-Shell's manual in depth, especially the explanation of the command sequence. Although each X-Shell command icon represents an entire X-CAD sequence, you may need to refer often to X-Shell's manual until you have comfortably buttoned down each X-CAD clicking sequence. The initial learning process here may be a bit time-consuming, but it will save you a lot more time later when you are using the program under actual working conditions.



X-Shell gives you a handle on dozens of X-CAD commands.

INSTALL AND LOAD

Because GrafX cannot sell X-CAD, you must install the latter on your X-Shell disk. The manual coaches both floppy- and hard-disk users through a simple installation routine. Allow 20 to 30 minutes for each installation. You can safely ignore the "Error 205" message after copying the last X-CAD file: "xcdocs" is an empty file in the initial release of X-CAD.

X-Shell and X-CAD make a memory-intensive combination. GrafX recommends at least 2.5 megabytes of memory, although I have used them together in a 1.5-meg system by limiting each drawing file to what I would plot on a single page.

Once installed, start your system with a warm boot. X-Shell employs a battery of public-domain software, which comes with the program. Using Runback, it loads Conman, changes the default font, loads Workbench, and then loads X-CAD. The entire process took six to seven minutes on my dual-floppy system.

As it loads, you can channel much of the program into RAM via a recoverable-RAM disk (such as ASDG's or the RAD: option on AmigaDOS 1.3). If your system has less than the recommended 2.5 megs of memory, however, skip this option. When I tried it with a 1.5-meg system, X-CAD would not load.

If your system has the extra memory, X-Shell rewards you by providing faster, smoother operation with minimal disk access—although GrafX still suggests adding a disk-caching program.

As X-CAD loads, watch X-Shell swing into action. Through X-CAD's Command window, you will see X-Shell rapidly execute strings of instructions, including those for creating "viewports" (the X-CAD name for windows). This is no mean feat: Setting up a viewport in X-CAD alone can take over 30 keystrokes.

X-SHELL MENUS

Once you're in X-Shell, brightly colored, well-designed screen menus control each major group of program functions and drawing commands. Each X-Shell icon replaces a score of X-CAD commands. Although GrafX succeeded in its overall attempt to make each icon represent both your desired task (such as drawing one line perpendicular to another) and the sequence required for execution, be prepared to refer to the manual frequently at first. In future revisions, GrafX has promised to simplify the learning process through selective use of colors in its task icons. A tutorial in this area is also in the works.

The program offers four main menus. ►

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Second Edition

by Rob Peck

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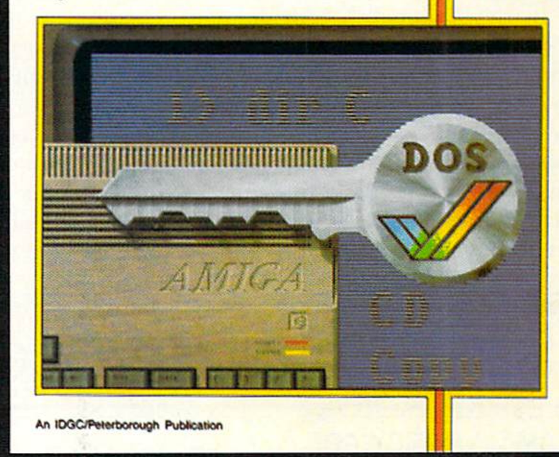
About the author: Rob Peck is one of the most respected and knowledgeable leaders in the Amiga community. Rob wrote the ROM Kernel Manual, the bible of Amiga developers. Rob is also the author of Programmers Guide to the Amiga and numerous magazine articles.

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THE AMIGA COMPANION
IDG Communications/Peterborough
80 Elm Street • Peterborough, NH 03458 AW889

Use the Display menu, which controls the viewport, to set your grid and select your layer, depth, and color. The Drawing menu accelerates the drawing process by replacing X-CAD's command strings with a single button.

The Symbols menu allows you to create text in Standard, Times, or Helvetica fonts in either single-stroke or outline format. You can place text vertically, horizontally, or at any angle, and adjust slant and spacing, too. You can also import text files. Place a "TextNode" on any object drawn, and the corresponding text will follow that object anywhere you wish to move it.

Also from this menu you can create dimension lines for measuring distances, lines, angles, or radii. Still other buttons allow you to merge objects into "symbols" (parts). Although X-CAD did not provide any samples, GrafX includes a few basics to get you started.

The Manage menu, as its name might suggest, lets you manage the other menus. Here, for instance, you can load or save your drawings and find out which files are contained on your disk. Other screen buttons from the Manage menu include Rotate, Move, Copy, Delete, Zoom In, Zoom Out, Scroll, and Change Viewports.

A Good Egg or Just an Empty Shell?

Any useful evaluation of X-Shell must consider both programs. The creation of a shell that brings the power of X-CAD to the designer who is not a programmer is a significant achievement. For the first time, I enjoyed working with X-CAD and felt truly able to capitalize on its speed and unique features. X-Shell may not have taken all the hassles out of using X-CAD, but it minimizes them considerably. For instance, I still have to zoom in to an incredibly tiny area to fully utilize a one-inch grid (the minimum degree of accuracy that I want my drawing to display), and then zoom back out to view my results, but at least these operations now take only a moment to execute.

Although X-Shell provides gadgets for the most commonly used X-CAD commands, it does not cover them all. In fact, I think that GrafX missed one of the most powerful features of X-CAD by skipping over the Window command (which lets you draw a rectangle around any group of objects and then act on them en masse). Fortunately, you can easily access commands not supported. To use Window, for instance, type in W and tap the space bar when the X-CAD display prompts you for LOC (location) or ENT (entity). Next, when the X-CAD Command window responds with :LOC, click in two diagonal corners to define your rectangular window. Then finish the command in X-Shell.

X-Shell handles well, and although you occasionally must refer to X-CAD's dreary manual to clarify points, it makes X-CAD accessible. In tandem, X-Shell and X-CAD provide a sophisticated CAD solution for $800—considerably less than comparable packages on other systems.

X-Shell
GrafX Computing
35 Newell Place
Fairfield, CT 06430
203/255-5166
$199
X-CAD required; 2.5 megabytes recommended. ■

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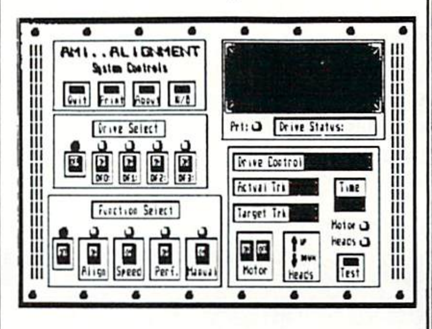
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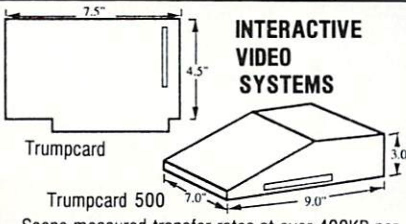
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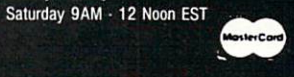
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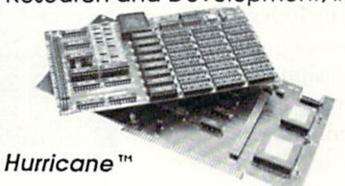
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WHAT'S NEW?

This month's delights require a hammock and an iced drink for the full effect.

Compiled by Jan Jackson

UNTITLED PASSION

WITH **VIDEO PAGE** ($199.95), Microshuki's professional video-titling system, you can mix fonts of various sizes and colors on each line, let the program space them, and re-enter the picture by defining effects. Large requesters provide for easy viewing at a distance. The US distributor is Impulse Inc., 6870 Shingle Creek Pkwy., Minneapolis, MN 55430, 612/566-0221. *Reader service number 557.*

BACK TO FORTH

ENTER THE WORLD of commercial programming with **JForth Professional 2.0**, an interactive language. The latest version includes an updated interface to graphics and menus, hashing for faster compilation, precompiled Include files, command-line history, a source-level debugger with breakpoints, IFF support, plus an animation system and an improved store of development tools. The package ($179.95) includes two assemblers and a disassembler. Key in with Delta Research, PO Box 1051, San Rafael, CA 94915, 415/485-6867. *Reader service number 554.*

AND SOMETIMES WHY

IF YOUR LIFE doesn't fit on your calendar, try **Who! What! When! Where!** ($99.95). The program, which supports ARexx, is designed to help you keep track of names, addresses, phone numbers, and birthdays. You can categorize each person into various groups for cross-referencing. Your social director is Blue Ribbon Bakery, 1248 Clairmont Rd., Suite 3-D, Atlanta, GA 30030, 404/377-1514. *Reader service number 550.*



Something from the oven at Blue Ribbon Bakery.

CHARGED LETTERS

GENERATE WORD POWER with **Font-Works** ($99.95). The program lets you design your own electrifying alphabets, capture letters from IFF pictures, or add a variety of effects to the fonts provided. You can enlarge characters to 1024 × 1024 pixels, and customize the palette by changing or mixing colors. Plug in by calling ACS Software, 2135 E. Sunshine, Suite 106, Springfield, MO 65804. *Reader service number 555.*

The **Lons Fonts** collection is designed for use with InterFont (Syndesis), making it compatible with all packages Interfont supports. Each set ($29.95) is rendered proportional by Interfont's conversion module. Connect with Micro Momentum Inc., 100 Brown Ave., Johnston, RI 02919, 401/949-5310. *Reader service number 556.*

COMMON KARMA

INTERCHANGE, the program that lets you share files between otherwise-incompatible 3-D graphics programs, has extended its reach. A new **InterChange Conversion Module** writes and reads objects to and from the latest version—3.0—of Turbo Silver (Impulse). InterChange retails for $49.95, the new turbo converter costs $29.95. If you own the current Turbo Silver converter, you can upgrade for $15.

The second package, **InterFont 3-D Object Font Designer**, supports Gold Disk's Professional Draw and Professional Page via InterFont, InterChange's companion character-design program. With InterFont you can create fonts and organize in 16-color then transfer them to Pro Draw or Pro Page via the conversion module. The Draw module is included in the new InterFont release; current InterFont owners can get it by contacting Syndesis, 20 West St., Wilmington, MA 01887, 508/657-5585. *Reader service number 563.* ►

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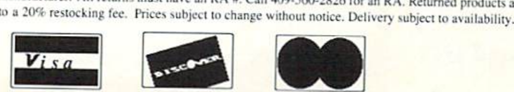
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I Can See Clearly Now

YOUR A2000 WILL have no secrets when it's housed in an **ACD 2000 Plexi-glass Case** ($400). This clear case replaces the Amiga's stock housing to let you see the manchine's internal mechanisms in action. The main board, power supply, storage media, and port connectors are all visible.

Each case is made to order by Advanced Computer Design, Carl-Schurz-Str.11, D-2800 Bremen 1, West Germany, 49 421 3499517. *Reader service number 577.*



Your system's appearance is limited only by your imagination, says Advanced Computer Design.

Desktop Fellini

LEARN MORE ABOUT the how, why, and when of computer video graphics with Cape Fear Teleproductions' three-part series of instructional videotapes. **Video Graphics Techniques** provides an introduction to signal theory, hardware requirements, font selection, text backgrounds, genlocking and keying, and effects, while **Color Cycling Animation** explains how to use color cycling for text and object animation, cartooning, background manipulation, and flow diagrams. Finally, **Digitizing For Effect** shows you how to transform photos and drawings and black-and-white video film into full-color digital images. To begin filming, contact Cape Fear Teleproductions Inc., 605 Dock St., Wilmington, NC 28401, 919/762-8028. *Reader service number 553.*

C Here!

PUT YOUR C programs on the inside track with **Aztec C Express** (ACE). The newest version of Manx's software development environment allows you to make direct connections from edit to compile to test. Without leaving the ACE environment, you can automatically return from compiler to editor, and target errors for immediate correction and recompilation. The program includes a fully integrated "point-and-shoot" project manager, a source-level debugger, and assorted development tools including non-Aztec editors and implements. Choose either the developer's ($299) or the professional ($199) package. Manx Software Systems has your ticket: PO Box 55, Shrewsbury, NJ 07702, 800/221-0440 or 201/542-2121. *Reader service number 560.*

Musically Inclined

DO YOU FIND it tedious to write repeating refrains when composing? The **OPUS-1 MCL** music-composition language lets you define chunks of music to insert as needed. You can generate very small music files in IFF and SMUS format that will repeat for an extended time. The program allows import of standard Amiga IFF-Instrument files and supports external MIDI synthesizers. Your conductor is Ariadne Software Ltd., 273 Kensal Rd., London, UK, W10 5DB, 01 960 0203. *Reader service number 551.*

Link your Amiga with a Korg DW-8000 or EX-8000 via a MIDI interface to perform real-time editing with **DWEL**. The program lets you transmit up to 64 instruments to your synthesizer's bank and load from single instruments or entire banks on Amiga disks. For would-be guitarists, **Guitar Chord Tutor** will help you learn finger positions and read music through a graphics interface. Both DWEL ($79) and Guitar Chord Tutor ($39) are available from Synthetic Reality Software, PO Box 360, Albany, MN 56307, 612/845-4755. *Reader service number 552.*

Get a firm grip on your scores with **MIDI Sample Wrench**. Use this professional sound-editing package ($279) to download 16-bit sounds from MIDI samplers or disk files, modify them with editing and digital signal processing, and upload them to other MIDI samplers (sampler support is provided through libraries). Tune up with dissidents, 730 Dawes Ave., Utica, NY 13502, 315/797-0343. *Reader service number 575.*

A Little This, a Little That

ABACUS HAS ADDED six new titles to its Amiga Reference Library Series. ***More Tricks & Tips for the Amiga*** ($19.95) offers techniques and hints for programmers. Read about ray tracing (in all screen resolutions), light sources, and shading in ***3D Graphics Programming in BASIC*** ($19.95). ***Graphics Inside & Out*** ($34.95) covers both simple operations (drawing points, lines, and rudimentary patterns) and complex (such as using your Amiga's bitmap graphics and animation features). Or, design and program interfaces with Intutition, use jump tables and dynamic arrays, and learn to combine assembly and C programs with ***Advanced C for the Amiga*** ($24.95). ***Advanced System Programming on the Amiga*** ($34.95) offers insight on AmigDOS 1.3. Finally, learn how to protect your disks from viruses with ***Amiga Virus Protection Toolbox*** ($59.95), a book-and-disk combination. The software includes Boot Check to prevent startup viruses, Recover to restore information to disk, and Check New to identify new data files. Hit the books by calling Abacus, 5370 52nd St. S.E., Grand Rapids, MI 49508, 616/698-0330. *Reader service number 558.*

The ***AmigaDOS 1.3 Reference Book*** ($3.50) is a 12-page guide offering standard-devices and assignments lists, CLI and Shell error codes, and ED editor commands. Your librarian is the Computer Club Company, 13013 Lee Jackson Highway, Suite 142, Fairfax, VA 22033, 703/968-7588. *Reader service number 559.* ■

HORS D'OEUVRES

Hints, tips and techniques

from your fellow Amiga users.

These tidbits from our readers are not always going to be to everyone's liking. In fact, some of them may not go down well at all. We can't test everything to the last detail, so be sure to work with backup copies of your disks when experimenting with any of these tips. If you find that one of these tips is, shall we say, unpalatable, then see if you can determine how it should have been prepared and then let us know. Every programmer knows there is more than one way to skin a mouse, and we hope that this will be a springboard for discussion of the best, fastest, strangest, and most useful hints and tips for everyone.

1.3 Crashes

WHEN I FIRST started using the 1.3 version of AmigaDOS, I was getting some pretty serious crashes, requiring me to turn off the computer and reinsert Kickstart. This only happened with Kickstart 1.3 and certain programs. I was never able to determine what was causing the deep crashes. I checked these disks for viruses and they were clean. The solution turned out to be suprisingly simple: Just boot with Kickstart 1.3 and a good 1.3 Workbench disk and INSTALL the disk in question.

Alan Stanley
Prince Edward Island, Canada

PD Doc Files with ProWrite

THE EASIEST WAY to review the documentation that comes with PD software is to read the doc file into a good word processor. If you use ProWrite (New Horizons Software) you have to create a dummy file first and then rename the icon so that it is the same as the doc file, or ProWrite won't read it (e.g., save a blank page as dummyfile, then go to the CLI and RENAME DUMMYFILE.INFO DOC.INFO). It will then load properly and you can reformat it to suit your own needs. You can use the word processor's built-in capabilities to search, print, toggle through pages, and print only those portions that you need for hard copy. You can do the same thing with your capture file when you've been online. You can format your downloaded text, easily get rid of menus, etc. that you have captured but don't want, and then format what you wish to keep and save, and/or print what's left either as a single large file or multiple smaller files.

Alan Stanley
Prince Edward Island, Canada

Grid Pointer

HERE'S A LITTLE trick I discovered while waiting for my mouse to be repaired.

Just about everyone knows that you can move the mouse pointer with the keyboard; just hold down one of the two Amiga keys while using the cursor arrow keys, and you will have control of the pointer. Now try this. Hold down an Amiga key *and* the Shift key, and then press the cursor arrow keys. The pointer will move through an invisible grid, somewhat similar to the DeluxePaint Grid option.

Santiago Badano
Montevideo, Uruguay

Invincible Knights

HERE'S A TIP for Defender of the Crown enthusiasts. You can get 1024 invincible knights for your campaign army and an equal amount for your home army! You can also become a super expert swordsman when raiding or rescuing.

To get the invincible knights, type in "k" simultaneously as you are building the army's soldiers with the left mouse button. Press "continue" and you will find you have been given 1024 knights in each army. This sure helps when playing the game to win.

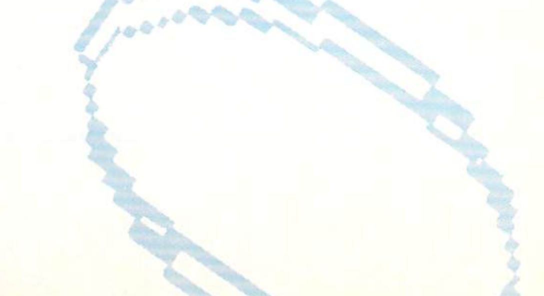
Trevor C. Blount
Wasilla, AK

Dithering and Okimate 20

IF YOU HAVE an Okimate 20 printer, go ahead and try the Halftone Dithering mode (in the Graphic 2 window of Preferences). The manual says that Halftone only works well on printers with a resolution greater than 150 dpi, but it works fine on the Okimate and gives greater detail in color printouts. Don't bother trying F-S (Floyd-Steinberg) Dithering; it only makes the picture darker and can't be used with Smoothing.

Nick Radov
Watsonville, CA

If you have an idea you'd like to share with our readers, send it to Hors d'oeuvres, AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458. If your idea gets published, you'll receive an* AmigaWorld *surprise gift.* ■



HELP KEY

Cool Dude Lou gets your pictures a movin' and a groovin'.

By Louis R. Wallace

IFF-y Standards

Q: *Where can I acquire documentation on the IFF standards, especially graphics and SMUS under the 1.3 operating system?*

S. Browning
Rantoul, IL

A: Originally available to registered developers from CATS (Commodore Amiga Technical Service), all this information can now be found in the latest release of the *Amiga ROM Kernel Reference Manual: Includes & Autodocs* ($32.95, Addison-Wesley). Documenting the 1.3 system software, this volume has about 160 pages of information on the IFF standards, including ILBM, SMUS, FTXT, 8SVS, and several forms registered by third-party companies. Two additional volumes in the series are scheduled for release by summer: *Amiga Hardware Reference Manual* ($24.95) and *Amiga ROM Kernel Reference Manual: Libraries and Devices* ($34.95). Check your local bookstore for availability, or call Addison-Wesley for information at 617/944-3700.

Spritely Editor

Q: *I am trying to write some game programs using Amiga Basic, and I have some questions about sprites. First, I can't stand the sprite editor that comes with the Extras disk. I cannot draw accurately with it, and it has crashed several times. Are there any other sprite editors available for use with Amiga Basic? Second, is it possible to define a sprite image with Amiga Basic using POKE and DATA statements as you can on the C-64, so that you don't have to load the objects from disk?*

M. Lawrimore
Stockbridge, GA

A: I have seen several public-domain sprite-editor programs over the years, so you should be able to find one by looking in a catalog from a public-domain disk service. If you need to make BOBs, you can use a good paint program such as DeluxePaint III (Electronic Arts) to draw them, then use one of the public-domain conversion programs to convert the brush to an Amiga Basic BOB file.

Yes, you can convert Amiga Basic Objects to DATA statements, and you don't need to use POKE to put them in memory. Because Amiga Basic saves sprites and BOBs essentially as special string variables, you can use some BASIC commands to convert the string to data. To demonstrate, here is a simple example of converting an Amiga Basic object called bob$ to data statements:

```
l=LEN(bob$)
PRINT "data ";L datalines=INT(l/10)
lo=l-(datalines*10)
FOR i=0 TO datalines-1
PRINT "data ";
FOR j=0 TO 9
a=ASC(MID$(bob$,i*10+j+1,1))
PRINT a;
IF j<9 THEN PRINT ",";:ELSE PRINT
NEXT j
NEXT i
PRINT "data ";
FOR j=0 TO lo-1
a=ASC(MID$(bob$,i*10+j+1,1))
PRINT a;
IF j<(lo-1) THEN PRINT ",";
ELSE
PRINT
ENDIF
NEXT j
PRINT
END
```

With a little work you could write this data to a disk file, where it could be saved to disk and merged with one of your programs. Then, to re-create the object, you would just read the data back:

```
READ n
FOR i=1 TO n
  READ a
  nbob$=nbob$+CHR$(a)
NEXT i
```

Now you have the image back into a string variable in memory where it can be used in your program.

For a good book on the subject of Amiga Basic programming, take a look at *Advanced Amiga Basic* by Tom Halfhill and Charles Brannon ($18.95, COMPUTE! Publications, 912/275-9809). While several years old, it is still full of great tricks, and it does have a complete listing for an object datamaker.

Class Motion

Q: *Help! I want to create animations for my classroom demonstrations on an Amiga 500. Besides graphics and motion, I want to add digitized sounds and user interaction to the animations. I tried using DeluxeVideo. It is very clumsy and very limited, but at least it offers what I need. Are there any other commercial animation tools I could use that would be suitable for an entry-level animator, plus offer sound and keyboard support?*

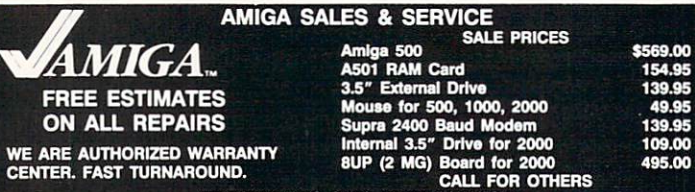
S. Connell
Los Angeles, CA

A: It sounds like you need The Director ($69.95, The Right Answers Group, 213/325-1311), which lets you combine graphics, animations, sounds, mouse and keyboard, fancy display wipes, and a simple programming language into a multimedia Amiga event.

Photon Video: Cel Animator ($149.95, MicroIllusions, 800/522-2041) also allows you to combine sounds with your animation. The program was designed to be a companion tool to the traditional cel animator, and allows you to load an animation into RAM, then synchronize sound playback to individual frames of the animation. ■

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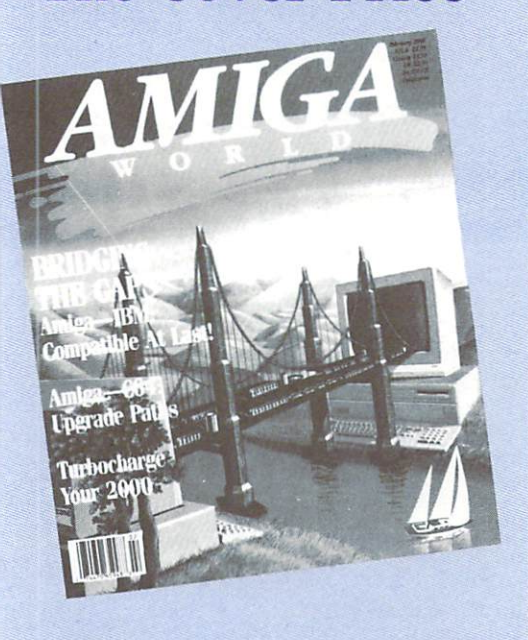


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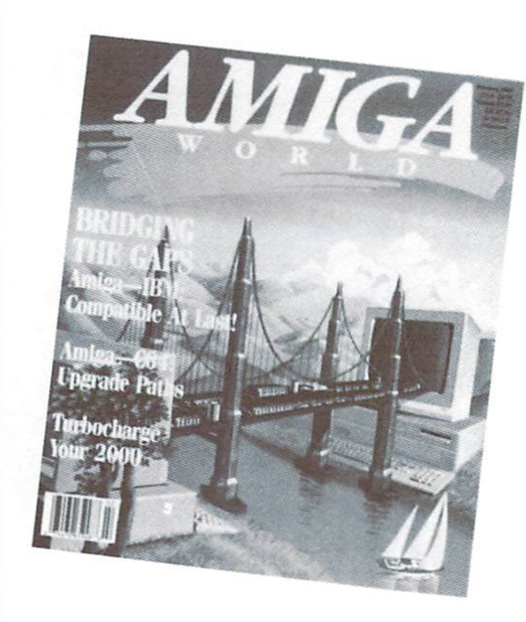
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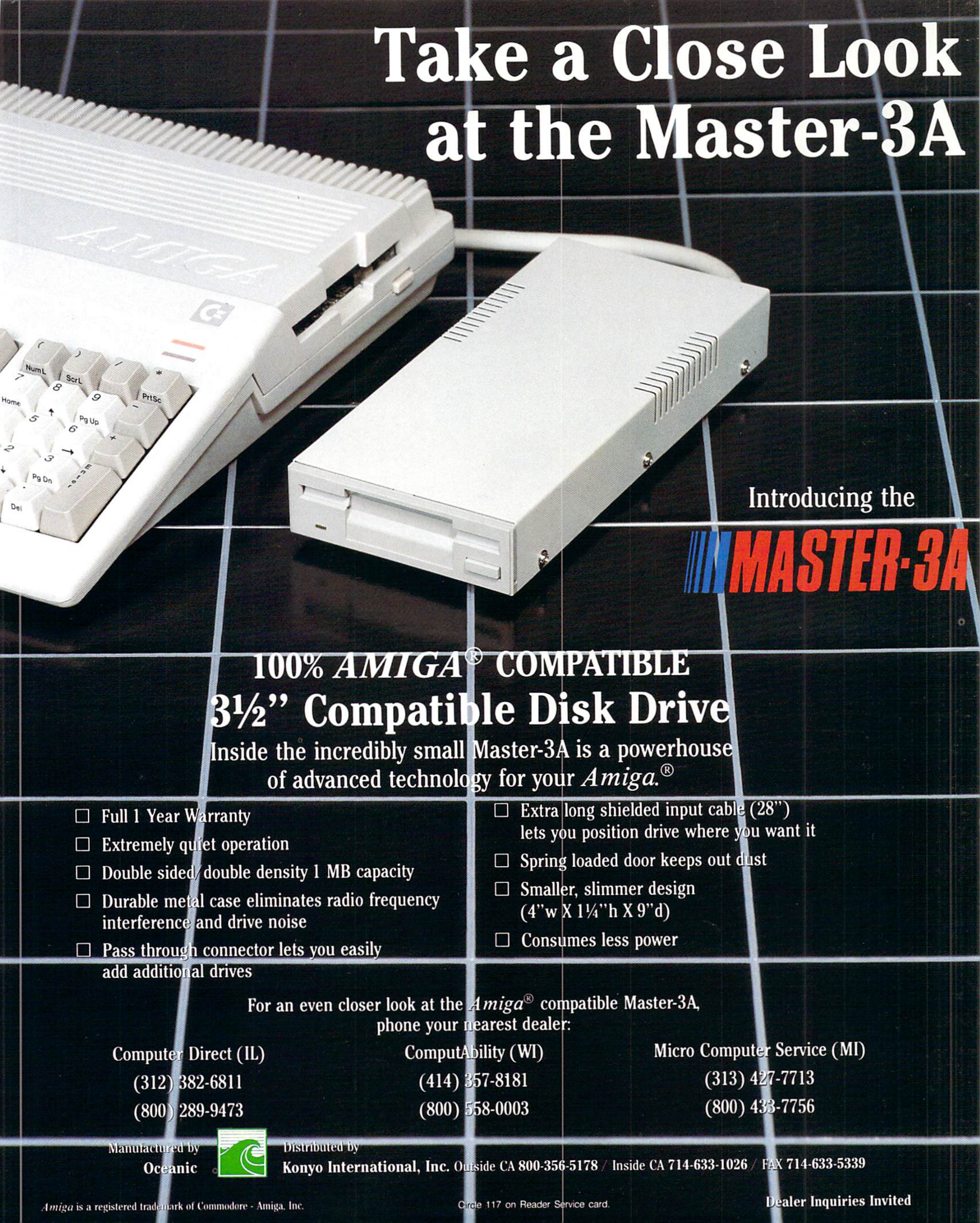


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